

# THE IRON AGE

THURSDAY, JANUARY 12, 1888.

## A New Belt Shifter.

Mr. J. W. Dennis, 14 West Seneca street, Buffalo, N. Y., is turning out an ingenious single cord locking belt shifter, of which we present two views, illustrating both back and front. Its manner of working is very simple, and will be readily understood from the engravings. In using this shifter for belts or clutches it is impossible to make a mistake. There is but one cord to pull one way, as the shifter is

number of prominent establishments, and that shop and territorial rights are to be disposed of.

## Ironfounders and Steel Castings.

The rapidly increasing use of steel castings cannot fail, according to the *Engineer*, to produce uneasiness in the minds of the majority of ironfounders. In some departments of engineering iron castings have

shows, and experience has proved, that in most cases this course is neither simple nor profitable. Steel for castings of any size is now almost universally melted in open-hearth furnaces, and the founder who has decided to commence this manufacture builds a furnace and attendant plant large enough to turn out the heaviest articles he is likely to be asked for; he engages experienced assistants, and commences operations. If sufficient work can be secured to keep the furnace going with some-

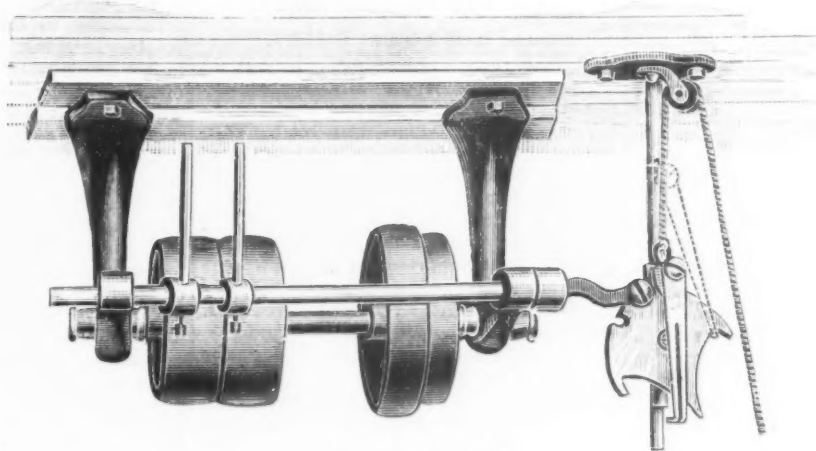


Fig. 1—Front View.

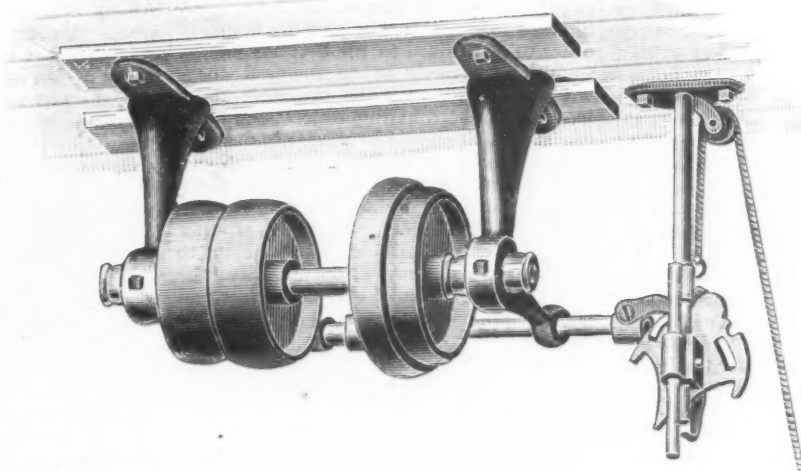


Fig. 2.—Rear View.

NEW BELT SHIFTER, MADE BY J. W. DENNIS, BUFFALO, N. Y.

a simple reverse motion, and the cord can be led anywhere in the shop most convenient for the operator. The shifter is always locked while not shifting, thereby preventing machinery starting or stopping unless the cord is pulled. It can be applied to any shifter rod now in use. The way in which the cord acts when pulled is clearly shown in the front view, Fig. 1, a counterweighted hook on the end of the cord engaging with either one of the projecting ends of the locking and shifting plate, throwing the latter from one side to the other and giving a corresponding movement to the shifter proper. The hook is shown in dotted outline when pulled to the upper limit of its travel.

We understand that the device has already been received very favorably in a

already been all but discarded, while in many other branches the field for their employment is daily growing more restricted. Marine engineering, which at one time absorbed large quantities of first-class iron castings, is fast becoming independent of iron in any form; and in numerous engines of recent construction little besides the cylinders has been of cast iron. This is a natural result of the demand for combined strength and lightness, but none the less it is a very unsatisfactory development for the proprietors of iron foundries, who thus see the best paying branches of their business passing altogether out of their hands. At first sight the remedy for this state of matters appears simple. The ironfounder must adapt himself to the times, and make steel castings. But a little consideration

thing like regularity he will in all probability, after experiencing some ups and downs during the first few years of his venture, find himself fairly established in a profitable business. But this keeping the furnace regularly employed is the special difficulty with the newly established steel founder. Even a small furnace is capable of making 50 to 80 tons of clean castings per week; and when only enough orders are booked to make up two or three casts per week, instead of 12 or 15 casts, it is plain that the work must be done at a loss. The open-hearth furnace cannot, like the cupola, be put in working order at a few hours' notice. It requires several days to bring it up to a working temperature, and, once started, must be kept going, burning gas, wasting

brickwork, and requiring attendance, whether actually in use or not, as long as there is any probability of its being wanted. In addition to the direct losses thus occasioned, the irregular working leads to the production of inferior and "waster" castings; while the expedient of making ingots to fill up time generally proves to be an unsatisfactory and unremunerative proceeding. These considerations naturally deter ironfounders from embarking in the steel trade, but it is at the same time certain that they do not view the diversion of their business into the hands of the large steel corporations with equanimity, and that many of them would gladly adopt any process for making steel castings which could be conducted intermittently without pecuniary loss. We are not prepared to discuss the nature of such a process, but may say that indications point to the use of "blow-pipe" furnaces burning gas of high calorific power, and to the use of aluminium as an agent for reducing the temperature of fluidity of the steel. The whole subject is one of great interest and importance, and well worth the careful attention of metallurgic chemists and engineers.

#### Defective Drip Connections on Engines.

With the modern high-speed engine, especially with those of the piston-valve type, or even with any engine located at a distance from the boiler, or where the boiler primes badly, it is necessary that the drip-cocks or valves should be slightly open, in order to afford egress to the water which may accumulate. In a very common form of such drip connections the valve-chest, both ends of the cylinder and the exhaust drips are led into one pipe connected to the inlet of a trap. This form of connection, provided check-valves opening outwardly are placed on the pipes outside or inside of the drip-valves or cocks, is a good one. Strange as it may seem, however, in about a dozen cases which have recently come to our notice less than one-half were provided with these checks, and, consequently, while the engine was running steam was wasted in large quantities by being blown directly into the exhaust-pipe from the steam end or else into the exhausting side of the piston, where it frequently occasions a further loss by creating back pressure. The latter is especially liable to happen when there is no drip on the exhaust-pipe or when the drip-valve on the latter is closed. We have frequently seen the drips connected in the manner just described, without the intervention of a trap on the main drip-pipe, the latter being led directly to the sewer or into the exhaust-pipe, where it turns down. The losses in this case are frequently very heavy. Again, where a trap is interposed the bypass valve on the top will be found open, thus preventing the trap from fulfilling its duty, which is to retain water until the pot is filled and then discharge the same under steam pressure. We would recommend closing this pass-by valve tightly and removing the wheel, or else by means of a chain and padlock secure the valve wheel, when the valve is hard on its seat, to some convenient piping. This pass-by valve in a heating job is a great convenience to free the system from water when steam is first turned on; for drip connections, however, its office is limited to occasions when the trap is stuck—or, in other words, when the outlet is obstructed and the trap fills up with water. Occasionally the discharge-valve to the trap will become wedged open, and the trap will thus be prevented from working. This can only be determined by inspection, and upon failure to hear the characteristic periodical roar incident to discharging.

In a large plant of which we know, where numberless traps are employed, a systematic daily inspection of the traps is made under the following instructions: If the trap be found cold to the touch, examine all inlet and outlet valves; if these be found wide open the trap is stuck, and the first opportunity must be taken to remove the trap for repairs. If the trap be found warm to the touch, open the discharge-drip (a drip or a tee on the discharge-pipe between the trap and a main valve on its discharge-pipe), first closing the discharge-valve. If a stream of hot water and steam shows itself, and continues to blow for several minutes, the trap is blowing through, and it is to be removed and sent to the shop for repairs. If no steam or water shows itself upon opening the drip, or if the flow ceases in a minute or so, the trap is working properly.

#### Gas-Fired Steam Boilers.

At a meeting of the British Sanitary Congress, held a few months ago, a number of papers on boilers were read. During the discussion of these Mr. John Head explained and illustrated the system of gas-firing for steam boilers recently perfected by Mr. Frederick Siemens, and as this subject, though not absolutely new, is yet of great importance and well worthy of the attention of steam users generally, we publish herewith an abstract of Mr. Head's remarks:

Mr. Siemens, when considering the action of gaseous flame in a furnace heated by contact, came to the conclusion that the flame was misapplied. He found that combustion was disturbed and the flame was partly wasted when brought into contact with any solid substance whatever, and that this was particularly the case with boilers, the plates of which, being in contact with water, must necessarily and constantly be at a temperature considerably below that of the flame. Mr. Siemens inferred that a gaseous flame, in order to be utilized to the best advantage, should burn freely in an inclosed space without contact with the materials under treatment or surrounding objects—in other words, that it should be placed under conditions analogous to those which apply to gas burners. If we consider a gas flame used for artificial lighting, say an Argand or flat, flame burner, we shall at once realize how undesirable it would be to introduce therein any solid substance; the result would be loss of effect, which would become apparent by diminution in the light and heat obtained, coupled with the production of smoke. Expressed in this manner, it becomes evident that contact of flame with solid substances is detrimental to combustion, and where heating by radiation has been adopted, the result of practice in high temperature furnaces, such as are used for the production of steel on the open hearth, for heating iron and steel, for the manufacture of glass, and other purposes, has been a saving of from 30 to 40 per cent. in the weight of fuel, improvement in the quality of the product, and diminished wear and tear of furnaces.

With these encouraging results before him, Mr. Siemens considered the application of his new method of heating to the firing of boilers. Gas coming from the gas producer to the boiler passes through a regulating valve, and thence onward to the combustion flue of the boiler, where it meets with a current of heated air, and, entering into combustion therewith, the flame circulates first through the combustion flue, afterward around the boiler, at the sides, and finally underneath on its way to the chimney. The boiler is set in brickwork, in much the same manner as for firing with solid fuel, the chief difference consisting in the provision of a double series of channels underneath, through some of

which the products of combustion pass away to the chimney, while the inflowing air to the boiler passes through adjoining channels. By this means the products of combustion leaving the boiler are deprived of most of their sensible heat, the action being so perfect that at a large works, where these improved gas fired boilers are used exclusively, the temperature in the main chimney flue at a short distance from the boilers has been found to be much below the point of boiling water. Inside the combustion flue of the boiler are placed fire clay rings, the object of which is to prevent contact of the flame with the plates of the boiler. A ring at each end of the combustion flue will suffice in short boilers, but where the length of flame flue exceeds say 10 feet or 12 feet, as is generally the case with boilers in this country, additional rings are provided at intervals. The flame flue should be clear from end to end, as cross tubes would interfere with proper combustion, and it is preferred to have boilers, such as Cornish boilers, with only one large flame flue, although at some works boilers with two flame flues are used.

The character and quality of the flame are subject to complete control by means of the gas regulating damper already referred to, the air regulating dampers, and the chimney damper also provided. By means of these dampers the temperature of the flame may be increased or diminished at will—or, in other words, the production of steam may be augmented or reduced at pleasure, and in either case without the production of smoke. In the papers which have been read, it was said that it was possible to avoid the production of smoke in boilers fired with solid fuel, provided that they are not pushed for the production of steam, which implies that the fires shall be kept thin and be supplied with an excess of air; otherwise smoke cannot be avoided. But in the case of boilers fired with gas and heated by radiation, no smoke need be produced under any conditions of working—that is, whether a large or small quantity of steam be required at any time; in fact, the presence of smoke would reduce the temperature of the flame and cause a diminution in the production of steam, so that the men in charge of such boilers would find it convenient, and to their own interest, to avoid the production of smoke. Where a range of boilers is fired by gas it is preferable to place them under a foreman who understands how to regulate the production of steam by regulating the supply of combustible gases to the boilers, and who can keep the men attending to the gas producers up to their work. Under such conditions boilers at work give regularly an evaporative power of from 9 to 10 pounds of water per pound of coal burnt in the gas producers. These results compare favorably with the best solid fuel fired boilers, but better results having been obtained, under certain circumstances, in later applications, it is confidently expected that an evaporative power of from 10 to 12 pounds of water per pound of coal will be obtained as a constant result. Where small fuel is available, it can be used in the gas producers for the production of the gas required for firing boilers, and the saving thus effected, added to that in weight of fuel, will in many cases produce an economy of from 40 to 50 per cent. in the firing of boilers upon the present practice with solid fuel. This result will be obtained with less attention, or hard work, in firing, and will be attended with greater durability of boilers, and last, though not least, with total absence of smoke.

Messrs. Nettlefolds have adopted the Siemens gas-fired boilers, to the exclusion of any other system, for their new works near Newport, Monmouthshire, and have eight such boilers, 28 feet long by 7 feet



diameter, in constant work, producing steam at a pressure of 70 pounds per square inch. This firm have arranged to build 10 such boilers, if necessary, to produce the steam required for their works, as in the case of solid fuel boilers being adopted they would have required eight boilers with superheaters, and the cost of superheaters would have been the same as the cost of two additional boilers. Superheaters are, of course, inapplicable where the gases leave boilers at the low temperature mentioned; and it is satisfactory to find that the two additional boilers proposed to be employed have been found to be unneces-

with results as satisfactory as those given above. In Germany, where brown coal is used containing a large proportion of non-combustible substances, the figures quoted of course do not apply; but as compared with boilers fired with solid fuel of the same kind, the advantages realized are relatively quite as favorable.

#### Girder Street Railway Road-bed.

Every one who has given even the slightest attention to the systems now in vogue of laying down street railway road-beds

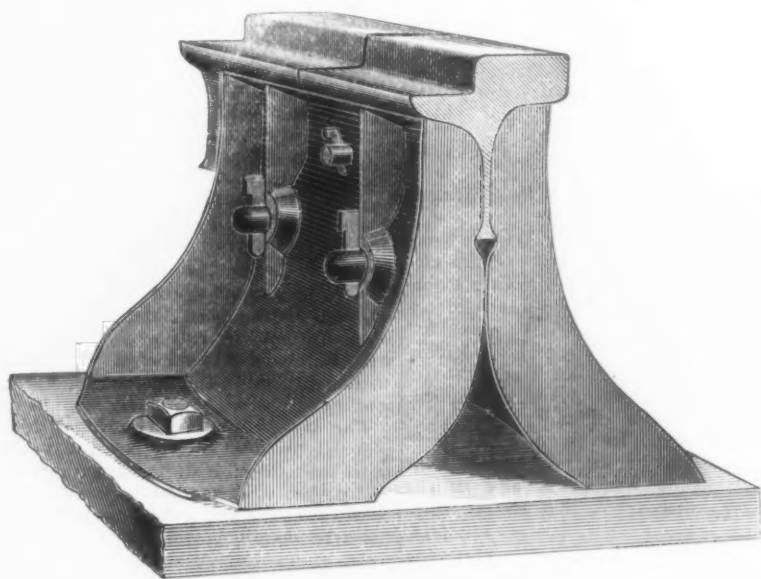


Fig. 1.—Double Chair for Joints.

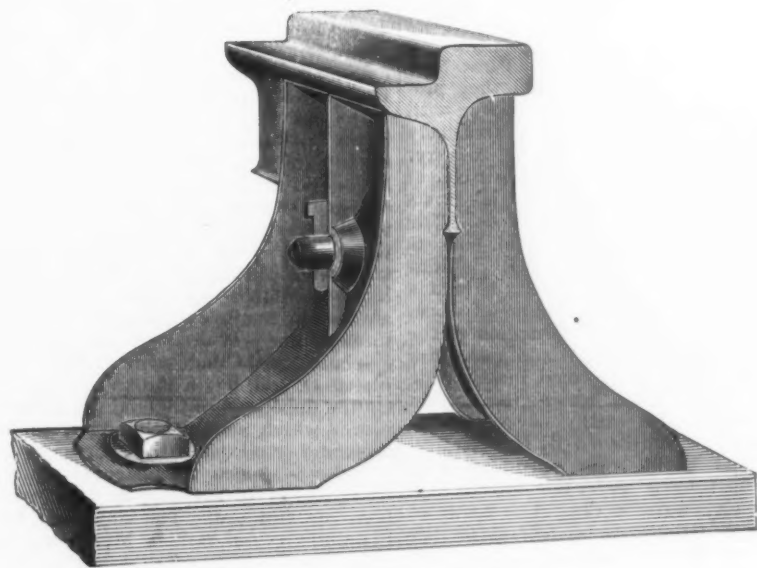


Fig. 2.—Intermediate Single Chair.

#### THE WHITE STREET RAILWAY ROAD-BED.

sary, so that the cost of these boilers themselves and settings has been saved. Sixty gas-fired boilers have also been fitted with rings in the combustion flues at the Barrow Hematite Steel Company's Works. This application was made after careful trial to one, and subsequently to six boilers, when it was found that the altered boilers gave distinctly greater evaporative power than the boilers not altered, although all boilers were supplied with the same quantity of gas from the same source; but that source being blast furnaces, the advantage of the application could not be ascertained in figures. Many applications of gas-fired boilers have also been made on the Siemens radiation principle in Germany and Italy,

must have been struck, above all other things, with the great inconveniences to traffic in laying and repairing them. The engravings which we present on this page, illustrating a method brought out by Mr. R. T. White, 12 Pearl street, Boston, Mass., by which these and many other difficulties are avoided, will therefore prove of some interest.

We should note here that screw bolts, fish-plates, and a number of adjuncts to other systems have been discarded by Mr. White, greater simplicity and economy of construction being thus attained. Fig. 1 represents a double chair of cast-iron, used where joints are necessary, instead of fish-plates or splice-bars, with the rail having

a fillet on the lower edge of the web, which fits tightly into a corresponding groove in the chair, as shown. The rail is held solidly in the chair by an improved key bolt, which passes through the chair under the rail. Another one passes between the ends of the rails as shown, thus holding the jaws on the chair firmly to the web, making it an utter impossibility to move it when once keyed.

Fig. 2 represents a single or intermediate chair, with rail, having a fillet on the lower edge of the web, which fits tightly into a corresponding groove in the chair. The rail here also is held solidly in the chair by a key bolt, which passes through the chair under the rail, holding the jaws of the chair firmly to the web. The chairs are bolted down to wooden cross-ties, though Mr. White has turned out some designs in which only iron is employed, the chair and sleeper being combined. The bottom ribs and outside pairs are, in that case, cast in one piece and have removable outside jaws. The cost of the system, Mr. White tells us, is no greater than that of the ordinary methods now prevailing. The simplicity and durability of the whole arrangement are, moreover, at once apparent.

#### Emery-Wheels.

In a recent paper presented to the Polytechnic Section of the American Institute, Mr. L. Duvinage divided the emery-wheels now in the market into two general classes. One class of wheels has the grains of emery joined and consolidated by a pitchy material, as rubber, linseed oil, shellac, &c. These must run at a high speed to burn out the cementing material by friction, loosening the worn grains and thus revealing new cutting angles. These are non-porous wheels. Truing up this class of wheels is done with a diamond tool. The other class consists of two kinds, one made by mixing the emery with a mineral cement and water into a paste, which will harden and bind the grains together; the other kind by mixing the emery with a mineral flux or clay, molding into shape and burning in a muffle at a high temperature. These are porous wheels, in which the grains of emery are held together by matter having affinity therefor. This class of wheels, unlike the grindstone, has sharp grains of emery bedded together among matter which, in some cases, is as hard and sharp as the emery itself. Such wheels cut very greedily, and do not need to be run at any particular speed. The dresser, made of hardened steel picks, is the proper tool for toning up this class of wheels.

As showing the rapid increase in the value of real estate in Pittsburgh during the past 20 years, a case which has arisen in that city gives some valuable information. It seems that about the year 1865, when the present enormous iron business of Carnegie Brothers & Company was in its infancy, that firm leased from the heirs of the Denny estate 8 acres of ground situated in the Fifteenth Ward in the above city, at an annual rental of \$4200, with the privilege of re-leasing at such figures as might prevail when the agreement terminated. Upon the termination of the lease, which expired a few months ago, the agents of the Denny estate advanced the rental of the property to \$24,546 per year, which the firm refused to pay, claiming that it was too high. Court proceedings were then instituted, but at the request of Mr. Andrew Carnegie the matter has been referred to B. F. Jones, John R. McCune and Mark W. Watson, all well-known citizens of Pittsburgh, as arbitrators. A partial hearing of the case has already been held, but no decision has yet been announced.

### Heating Surface of Vertical Boilers.

The *Locomotive* in its last issue directs attention to a very common error in figuring the heating surface of vertical boilers. We quote:

The usual method of reckoning the power of the ordinary form of upright tubular boiler seems to be to figure everything from the bottom of the water-leg to the top of the upper tube sheet in a lump, and call it effective heating surface. Sometimes a little more seems to be added to the amount thus obtained, for the purpose, evidently, of making the nominal power figure just right according to some standard. That this method of computing the heating surface of this class of boilers is liable to lead to serious errors may be easily shown. That portion of the fire-box surface below the surface of the layer of fuel is of very little use for making steam. The fuel lays dead against these surfaces within a very short time after making the fire, and unless the fire is very skillfully handled there will soon be a non-conducting layer of ashes in contact with the sides of the furnace, which will effectually prevent the transmission of heat to the water in the water-leg. It will be perfectly safe to omit the lower 6 inches or so of the fire-box in estimating the power of the boiler.

But the most serious source of error consists in estimating that portion of the tubes above the water line as heating surface. In some boilers this forms about 35 per cent. of the total surface exposed to the fire, and it may easily be seen that great discrepancies may sometimes be found between the nominal power of a boiler where such surface is estimated and the actual power it may be enabled to develop. For the sake of illustration we have taken the amount of heating surface given in the catalogues of several makers of this kind of boiler, and compared it with the amounts obtained by figuring the same from the dimensions of the boilers as given by them in the same tables. In every case the amounts given exceed, in some cases considerably, the figures we obtained by calculating the entire internal surfaces of the boiler from the bottom of the mud-ring to the upper tube sheet, and when proper deduction is made for the useless portion of the upper ends of the tubes, the discrepancy in every case is found to be very great.

Of course it makes no difference in the actual power of a boiler whether this surface is estimated or not, the point we wish to call attention to is the fact that in designing steam plants if the surface is figured this way, and no margin is allowed, the boiler power will generally be found, when the plant is started, much too small. A single case will illustrate this point. A heating system was put into a large building, and it was thought that upright tubular boilers were the most available for the space allotted for boiler-room. They were put in, the amount of heating surface being figured very close, as is generally the case with such contracts where there are several competitors for the work. When the plant was started up it was found that holding steam was simply impossible; a calculation of the heating surface (actual) of the boilers showed it was just sufficient to maintain steam in the supply and return pipes of the system (which, owing to the peculiar arrangement necessary, were very numerous and of large size), and in cold weather this was all that could be done. Every expedient was resorted to that could be thought of, but all to no purpose whatever, until more boiler power was added, when everything worked as smoothly as could be wished.

Beginning with January 2, 1888, the Pennsylvania Railroad Company inaugurated a system of savings accounts with

its employees, which President Roberts believes will result in great benefit to an army of persons on the company's pay rolls. He has issued a circular to those in the company's service on the main line of the road and its branches and leased lines in Pennsylvania, notifying them of the scheme. Certain ticket and freight agents are authorized to receive for the company from any employee sums of even dollars, not to exceed \$100 in any one month, for which certificates of deposit will be issued. On these deposits the company will pay interest to the depositors at the rate of 4 per cent. per annum. President Roberts believes that the convenience and absolute security of this savings system will induce employees to put away a large share of their wages that is now spent needlessly, and to prompt them to thrifty and provident habits, for the development of which only the opportunity was needed.

### Discovery of Natural Gas in Chicago.

A flow of natural gas has been discovered at Chicago under very peculiar circumstances. The Cooke Brewing Company's brewery, at Twenty-seventh street and Johnson avenue, draws its water for steam purposes directly from Lake Michigan, which is about 200 feet distant, through a 5-inch pipe. About the middle of last month some difficulty was experienced in making the pump work, as it seemed to be drawing air from some source. An investigation was made, and it was accidentally discovered that gas of some kind was being drawn through the pipe with the lake water. A small pipe was then attached perpendicularly to the main water-pipe in the engine-room, the gas rushed through it, and when it was lighted it made a flame from 8 to 10 inches in length. The pressure is quite light and variable, but the flow of gas continues and is attracting much interest in Chicago. Experts have examined the flame and analyzed some of the gas, and they pronounce it identical in composition with the natural gas now being so extensively utilized in other sections of the country. The question arises, Whence does it come? The end of the water-pipe in the lake rests in water from 16 to 20 feet deep. The bottom of the lake at that point consists of a stratum of heavy clay, with a light covering of sand. The experts submit a number of theories, but most of them agree that the geological formation of the soil is such as to admit of large quantities of natural gas being formed beneath the bottom of the lake, forcing its way in time through the earthy covering, this view being strengthened by the recollection of gas having been encountered in boring the tunnels under the lake to supply the city water-works. The result of this latest "find" is a revival of the natural gas fever in Chicago, and there is again a possibility of test wells being bored in the city and its immediate vicinity.

**The Coal Mines of Indiana in 1887.**—State Mine Inspector McQuade, of Indiana, in his annual report to the Governor, places the output of the State's 220 coal mines at 3,217,711 tons, an increase over the previous year of 217,711 tons. But for a stubborn strike in Davis and Vanderburg counties, in which 1000 miners were idle during October and November, the output would have reached 4,000,000 tons, thus advancing Indiana in rank from sixth to fifth as a coal-producing State. The capital invested is \$2,192,000, all of which is actively employed in mining, and not simply in coal lands. This is a large increase over the preceding year. During the year the New Pittsburgh Coal and Coke Company at Alum Cave doubled their capital stock, making it \$300,000, while the Chi-

cago and Indiana Coal and Coke Company began operations with a capital stock of \$250,000. The total number of miners employed was 7304, including 689 day laborers. The two-weeks pay-day, screens, day wages, scales, and other questions caused more or less friction, but all is now quiet. Natural gas had no perceptible effect on the output. On the other hand, the long-haul clause of the Interstate Commerce bill, in excluding Eastern coal from Western markets, opened up an immense field to Indiana coal, which, owing to scarcity of cars, the railroads could not fill. Thirty-eight accidents, including 17 fatalities, occurred, none of which were from fire-damp or other explosive gases, showing the condition of the mines to be good.

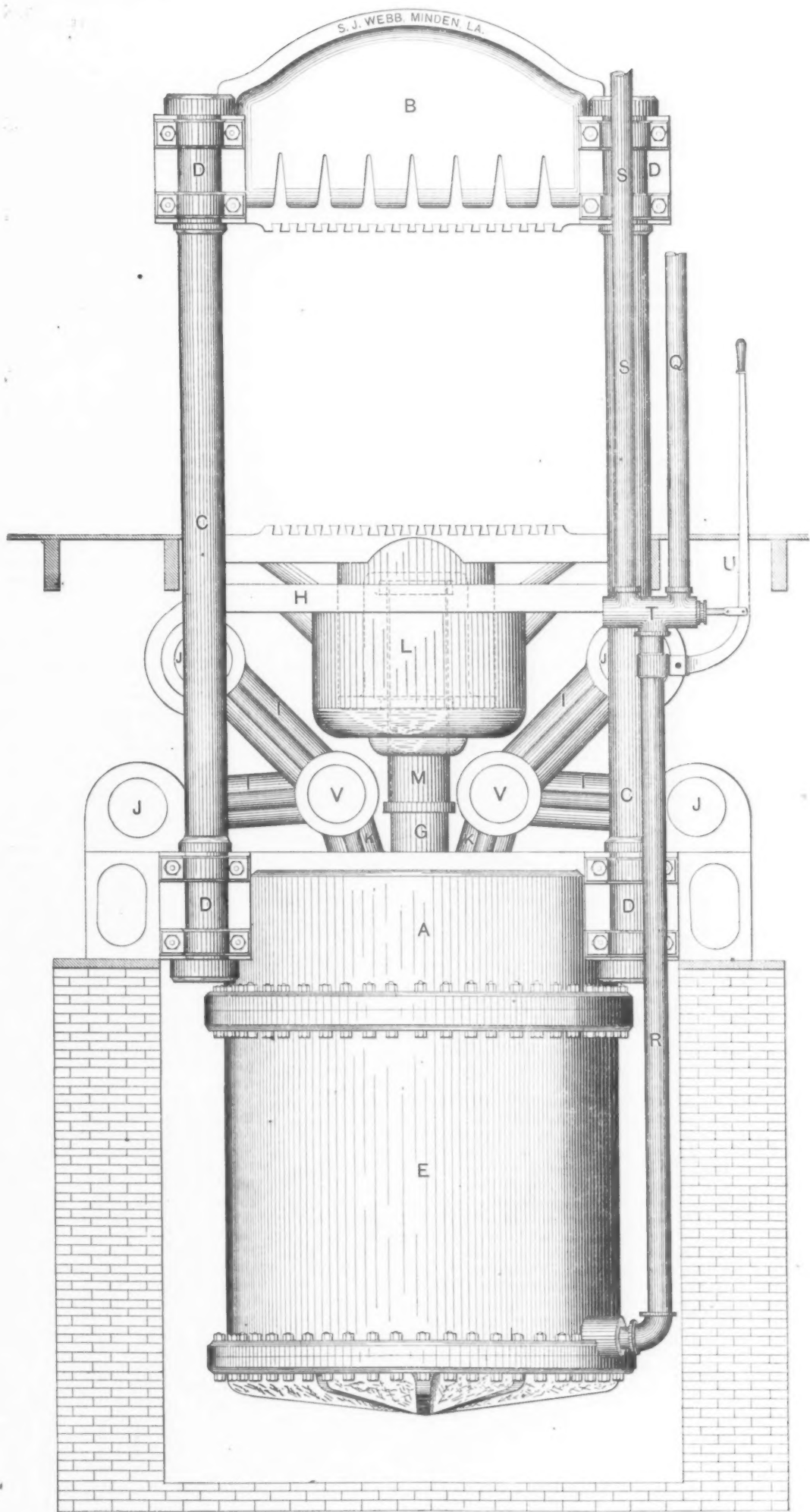
### The Webb Cotton Press.

One of the largest pieces of machinery ever constructed at York, Pa., is an improved cotton press recently built by the Pennsylvania Agricultural Works, of that place, from designs by Mr. S. J. Webb, and intended for use in the northwestern part of Louisiana. The engraving which we publish on the opposite page fully illustrates the several prominent features of the press, and will enable our readers to understand without difficulty the manner in which it works.

The bed-plate A is connected to the plate B by four corner posts, C. These posts pass through slotted openings, D, in the plates, and have their heads welded or forged on, and each post is made sufficiently strong to resist the total pressure upon the bale. A steam cylinder, E, is bolted on to the under side of the plate A, and is provided with a piston and piston rod, G. The plate A is bored out to the same size as the cylinder E, so that it will form part of it. The movable block H is driven up between the four posts C by means of toggles I. Each of the latter has one of its ends connected to the block H, and the other end connected to the plate A by means of pins J. These are 12½ inches in diameter and made of the best steel. The toggle K is connected at the knee-joint to the piston-rod G, and has its outer ends connected to the knee joints of toggles I by means of pins V, so that when the piston is driven up all of the toggles are straightened at the same time and the block H is forced up. Fitted to the latter are two hydraulic cylinders, L and M, the former being provided with a piston which is secured to the under side of the bottom platen O, and has a stroke of 7½ inches. On the upper end of the rod G is a small piston which acts as a plunger, to drive the water or oil out of the cylinder M into cylinder L—hence, the platen O is forced up 7½ inches further after the toggles have been straightened. The object of these hydraulic cylinders is to bring every bale to the same density without having to use a wedge. The pistons, it will be seen, are operated automatically as the steam piston is driven up. Steam is supplied through the pipe Q and branch R, the exhaust passing off through the pipe S. Steam is admitted to and allowed to escape from the cylinder by means of the valves T, operated by the lever U, the latter thus having direct control of all the movable parts. The cylinder is 80 inches in diameter and has a 9½-foot stroke.

The new Steelton Works on the Patapsco River, near Baltimore, have caused several large manufacturers to inquire into the special facilities offered at that point, and among those who are reconnoitering are Geo. S. Strong, of the Strong Locomotive Works, and C. C. Worthington, both of New York. J. E. Stimpson, the dock builder, is making investigations at Locust Point.





A NEW TOGGLE JOINT COTTON PRESS, BUILT BY THE PENNSYLVANIA AGRICULTURAL WORKS, YORK, PA.

### The Calumet and Hecla Fire.

While in some particulars it is incomplete, yet there is a good deal of interest in the following account, by a correspondent of the *St. Louis Globe Democrat*, of the condition of affairs in Lake Superior. We quote from it the following:

Regarding the exact condition of the Calumet and Hecla fire there exists a great diversity of opinion. The local management has suppressed information about the fire as much as possible since it first broke out, and has declared that the fire was under control at a time when it is certain that it is far from it. Many untrue things have been written and spoken about this fire, which is so far-reaching in its effects, and an exact description of the present status of affairs can be pardoned in consideration of the fact that the fire is of such great importance to the industrial world. The shafts leading into the main mine are all hermetically sealed with long timbers and dirt packed closely over the entrances. Black Hills or South Hecla mine, which is practically a separate mine, though owned by the Calumet and Hecla Copper Company, is now employing 500 miners and producing 1500 tons of copper each month. The stamp-mills and smelting-works are running with half forces. The miners and workmen out of employment are not despondent, as has been stated in the dispatches, although their present position is an unpleasant one. Every one who has an intimate knowledge of the workings of the mine, and of the vast deposits of copper, knows that if every stick of timber were burnt out of the mine it would be reopened when the fire was out.

The carbonic-acid gas which is produced and sent into the mine in such large quantities may and may not have done as much good as the mine officials claim. One hundred thousand cubic feet of gas a day will adulterate the air in 1,450,000 cubic feet of space to such an extent as to put out fire, but the tendency of the gas, which is heavier than pure air, is to drop to the bottom of the mine in bulk and not to remain where it will do the most good. The temperature reports are taken in this way: A small gas-pipe extends 400 feet into the mine down a shaft. A thermometer is dropped into this gas-pipe and the temperature registered. The temperature varies greatly, probably on account of underground currents of air, and cannot be depended on as indicating the condition of affairs in the mine. In fact, the men who are fighting the fire are nearly as much in the dark as an outsider. The peculiar situation of affairs renders it impossible to more than guess at the state of the fire which is burning more than  $\frac{1}{2}$  mile beneath their feet.

The caving in, which has occurred several times, while not as serious as represented to be by interested parties, is a very bad thing. It is caused by the settling of timbers on the upper level. When the mine was first opened the ignorant miners "stoped" out the rich copper rock, leaving nothing to support the great weight of the drift and alluvial soil above the copper vein. An immense amount of timbering has been required to keep the entire superstructure of the mine from caving in, and new timbers are constantly required to hold up the great weight. When the mine was closed down on account of fire it was expected that caves would occur frequently, and they have. Several years ago the mine suffered greatly from caving in of the hanging walls, and a partial cessation of work and the expenditure of immense sums for timbering were required to place it in workable shape again. If the mine were flooded, as has been proposed, half of it would cave in before the water could be got out. It is certain that flooding would be tried only as an extreme measure, and when all other means of extinguishing the fire had failed.

It is extremely improbable that it will ever be tried.

When the fire was first discovered, on November 20, it was announced that the mine officials considered it of incendiary origin. Later on this opinion was abandoned ostensibly, but there is still an impression, and a pretty strong one, too, among the miners and those who know most about the circumstances surrounding the mysterious origin of the fire, that the Calumet and Hecla was set on fire. This impression rests on no tangible proof, but it cannot be denied that there is a certain amount of circumstantial evidence which goes to support this opinion. It is not a common occurrence for a mine to get on fire. Even among coal mines it is not common, and among copper and iron mines such a thing is almost unknown, and this is the third time within three years, and the second within four months, that the Calumet and Hecla has been compelled to shut down on account of fire. Were the fire found to be out and the mine opened to-morrow the smoke and gas could be cleared out of the mine within three days. The Calumet and Hecla is provided with machinery and appliances for every possible emergency, but unfortunately the emergency is sometimes too sudden and the misfortune too great to be overcome by any machinery or by human ingenuity. The fire has led to numerous smaller complications, which, though small individually, are in the aggregate a cause of much annoyance. For instance, trouble is now being had with the boilers at the mine. The carbonic acid gas, manufactured by the action of muriatic acid on limestone, or similar rocks, carries with it a suspension of a certain amount of acid. This acid is absorbed by the water in the mine, and the water pumped from the mine finds its way to the dam from which the water for the boilers is taken, and the effect of the acidulated water on the interior of the boilers is very bad.

The immediate effect of the Calumet and Hecla fire has been to stiffen the prices of copper stocks and to assist in increasing the price of lake copper. In the Lake Superior copper district its effect has been noticeable, although not as great as would naturally be expected. The only mine of any importance to resume operations on the strength of the rise in copper has been the Allouez, which was closed down a few months ago. About 20 men are now at work, and if there is a prospect of 15 cents or 16 cents for copper for a year or more, by next spring this force will be largely increased. The Allouez has never made any money, and over \$250,000 have been sunk in the property. The rise in copper has helped several of the smaller mines out of a very tight box. For instance, the Osceola had made less than \$10,000 for the year up to November 1, but by selling copper at 15 cents and 16½ cents will have nearly \$100,000 in the treasury by this time, and can declare a \$75,000 dividend. The Franklin has sold a large amount of copper at the present ruling prices, and can pay stockholders a \$40,000 dividend. The Tamarack will pay a big dividend next year, and the Osceola, which has at last struck the Calumet and Hecla vein on a cross-cut, can pay stockholders a nice dividend in 1888. The Kearsarge, Mikado and other mines which have been considered "promising properties" can easily step into the ranks of profit-paying mines next year, providing copper stays above 12½ cents for the season.

A collapse in the price of copper is generally expected by the mining men of the district, and they are as well informed as any one. The drop in the price of metal will be followed by a shrinkage in the price of stocks, but unless a strong combination is formed to keep the price of copper down it will not stay at 10 cents or even at 11 cents. Twelve to 15 cents is its

normal price, and it cannot be produced in quantities sufficient to supply demands at a much lower price. The commercial uses of copper are rapidly increasing, and will continue to increase. Mining and moneyed men of the district are dabbling very little in speculation on the price of copper or copper stocks. Dearly bought experience has taught them caution. When they buy, it is for an investment. Copper is being shipped from the smelting works just as fast as it can be produced, and every effort is being made to increase production. Special trains loaded with copper leave here almost daily and go straight to the Atlantic seaboard for sale. Notwithstanding the fire which has crippled the largest producer for the last six weeks of the year, the product of lake copper for the present year will be larger than the output of 1886, and as prices are ruling 50 to 65 per cent. higher than last year the mines will make more money this year than last, though the dividends will not be larger.

The new smelting works on Dollar Bay will begin work in 1888, and will be second in point of size only to the mammoth works of the Calumet and Hecla, at Lake Linden. The Hancock Smelting Works are turning out much less copper than last year, as the Lake Linden works, which were started up last summer, now smelt much of the mineral that formerly went to Hancock. It is probable that within the next 18 months works will be built to manufacture the raw copper. This, of course, would furnish employment to a large number of men, and would add very materially to the prosperity and population of the district. The policy of the Calumet and Hecla and of several of the other large mines is to centralize their business as much as possible. Were the first-named mining company to enter the ranks of copper manufacturers they would at once take a commanding position, and would become as prominent as a manufacturer as they now are as a miner of copper.

The report of C. B. Morton, the United States Commissioner of Navigation, shows that the business is perhaps more than any other governed by the competition of all nations, and says that unless the American ship in foreign ports or in our own can take cargoes as cheaply or more cheaply than the English, Norwegian, German or Spanish vessels the merchandise will be transported by the foreign vessels. The Commissioner sets forth in detail the various aids and advantages enjoyed by the shipping of other nations, and concludes that it is impossible without a change of the present conditions for our navigation to regain its lost supremacy in the foreign trade. He says that our vessels must be put on an equality with foreign ships, or they must be gradually forced out of the contest. Bounties or subsidies are paid by Spain, Italy, Germany, France, &c., and British vessels have been and are aided under one guise or another. With regard to the coasting trade, the Commissioner says, the case is different, and the shipping employed, amounting to 3,090,282 tons, is reasonably prosperous, especially upon the lakes, where the coastwise trade is developing rapidly, the increase of American tonnage there during the year ended June 30, 1887, being 21,161 tons. The gain upon the Pacific Coast was 8761 tons and it was about the same on the Western rivers. The total documented tonnage of the United States is 4,105,844 tons, distributed as follows: Atlantic and Gulf, 2,638,272; Pacific coast, 356,445; Northern lakes, 783,721; Western rivers, 327,405. The foreign going registered tonnage is 1,015,562 tons. The Commissioner concludes his report with a draft of a bill embodying his ideas of the legislation required on this and other points calling for prompt action by Congress.



### Strikes and Lockouts.

Commissioner Carroll D. Wright has submitted to the Secretary of the Interior the third annual report of the Bureau of Labor, which relates entirely to strikes and lockouts for the period of six years ended December 31, 1886. This report is regarded as of special importance, as it is the result of the first general investigation ever made by any nation of the facts concerning strikes and lockouts for any extended period of time or for any wide extent of territory. The report exhibits the facts belonging to each industrial trouble for each locality where trouble was found, without attempting to establish or decide upon the connection between them. The following table shows the number of strikes occurring during each of the last six years, the number of establishments involved, and the average number of establishments involved in each strike:

Years.	Strikes.	No. establishments involved.	Aver. No. in each strike.
1881.....	471	2,928	6.2
1882.....	454	2,105	4.6
1883.....	478	2,759	5.3
1884.....	443	2,367	5.3
1885.....	645	2,284	3.5
1886.....	1,412	9,893	7.0
Totals....	3,903	22,336	5.7

In 1887 there were, according to the best information obtainable, 853 strikes, details of which are not available. During the six years covered by the investigation New York had the largest number of establishments affected, both by strikes and lockouts, there being for the former 9247, and for the latter 1528. The building trades furnished 6060 of the total number of establishments engaged in strikes. The total number of employees involved in the whole number of strikes for the entire period is shown to have been 1,318,624. The number of employees originating the strikes was 1,020,832. The number of employees in all establishments before the strikes occurred was 1,862,045, while the whole number employed in the establishments involved after the strikes occurred was 1,636,246, a loss of 25,798. There were 103,038 new employees engaged after the strikes, and 37,483 were brought from other places than those in which the strikes occurred. In 2182 establishments lockouts were ordered during the period named. In these there were 173,995 employees before the lockouts occurred and 169,436 after the lockouts, while the number actually locked out was 159,548. There were 13,976 new employees secured at the close of lockouts, and 5682 were brought from other places than those in which the lockouts occurred.

"It should be remembered, however," says the report, "that these figures do not represent the actual numbers of individual establishments or different employees engaged, as in many cases there have been two or more strikes or lockouts affecting the same establishment in the same year. In such cases the establishment and the number of employees engaged are duplicated." Of the whole number of employees involved in strikes during the six years covered by the report 88.56 per cent. were males and 11.44 per cent. were females. Of those involved in lockouts during the same period 68.78 per cent. were males and 31.22 per cent. were females. An examination of the tables appended to the report shows that New York, Pennsylvania, Massachusetts, Ohio and Illinois represent 74.74 per cent. of the whole number of establishments affected by strikes throughout the country, and 90.80 per cent. of the lockouts. These five States, it is stated, contain 49 per cent. of all the manufacturing establishments, and employ 58 per cent. of the capital invested in mechanical industries of the United States. Of the 22,336 establishments in which strikes occurred, in 18,342,

or 82.12 per cent. of the whole, strikes were ordered by labor organizations, while of the 2182 establishments in which lockouts occurred 1753, or 81.34 per cent., were ordered by combinations of managers. Of the whole number of establishments subjected to strikes there were temporarily closed for business 13,443, or 60.19 per cent.; on account of lockouts, 62.60 per cent. The average duration of stoppage on account of strikes was 23.1 days; for lockouts, 28 days.

The results of the strikes so far as gaining the objects sought are concerned, are shown to be as follows: Success followed in 10,407 cases, or 46.59 per cent. of the whole; partial success in 3004, or 13.45 per cent. of the whole, and failure followed in 8910 cases, or 39.89 per cent. of the whole. By lockouts 564 establishments, or 25.85 per cent. of the whole, succeeded in gaining their point; 190, or 8.71 per cent., partly succeeded, and 1305, or 59.80 per cent., failed. As to causes or objects of strikes, it is shown that increase of wages was the principal one, 42.44 per cent. The other leading causes are given as follows: For reduction of hours, 19.45 per cent.; against reduction of wages, 7.75 per cent.; for increase of wages and reduction of hours, 7.57 per cent.; against increase of hours, 0.62 per cent. Total for the five leading causes, 77.83 per cent.; all other causes, 22.17 per cent. Disclaiming absolute accuracy, the report gives the losses of employees and employers resulting from strikes and lockouts as follows: Losses to strikers during the six years covered by the investigations, \$51,816,165; loss to employees through lockouts for the same period, \$8,132,717, or a total wage loss to employees of \$59,948,882. This loss occurred for both strikes and lockouts in 24,518 establishments, or an average loss of \$2445 to each establishment, or of nearly \$40 to each striker involved. The assistance given to strikers for the same period, so far as ascertainable, amounts to \$3,325,057, to those suffering from lockouts, \$1,105,538, or a total of \$4,430,595. These amounts, however, the Commissioner says, are undoubtedly too low. The employers' losses through strikes for the six years amounted to \$30,732,653; through lockouts, \$3,432,361, or a total loss to the establishments involved of \$34,164,914.

The appended tables also show that the chief burden of strikes was borne by 13 industries—viz.: Boots and shoes, 352 establishments; brick-making, 478; building trades, 6060; clothing, 1728; cooperage, 484; food preparations, 1419; furniture, 491; lumber, 395; metals and metallic goods, 1595; mining, 2060; stone, 468; tobacco, 3959; transportation, 1478. These represent 89.35 per cent. of the whole number subjected to strikes. In lockouts five trades bore 80 per cent. of the whole burden, as follows: Boots and shoes, 155 establishments; building trades, 531; clothing, 773; metals and metallic goods, 76; tobacco, 226, or a total of 1761. Besides completing the field work for this report and the compilation of the information, the bureau has carried on almost to completion the investigation begun last year concerning the moral, physical and economical conditions of the working women of great cities, and has continued its investigation into the cost of the distribution of great staple products. It has also undertaken the collection of statistics of marriage and divorce in the United States, a report of which may be submitted before the close of the present session of Congress.

The increasing diversification of Southern industries is illustrated in the fact that Alabama alone secured during the year the location of five large car building plants, two at Decatur and one each at Birmingham, Anniston and Gadsden. The An-

niston Works will cost \$1,000,000, employ 1000 mechanics and will turn out 20 complete cars a day, from freight to passenger, parlor and sleeping cars, the entire work, from making the wheels to the upholstering, to be done in these shops. One of the car plants at Decatur is being built by the Louisville and Nashville Railroad, and the other will be the large works now at Urbana, Ohio, which are to be removed to Decatur. In the building of rolling mills, pipe works, machine shops and foundries the same activity is seen, while furniture factories, agricultural implement works, flour mills, gas and electric works, canning factories, wood-working establishments, &c., are being started all over the South.

### Jay Hubbell on the Copper Situation.

In an interview printed in the *Detroit Free Press* Hon. Jay A. Hubbell, who is prominently identified with lake Copper interests, is reported to have said:

The sensational reports spread over the country about the Calumet and Hecla fire originated from the bulls of the New York Metal Exchange. In Boston capitalists and operators have had reliable information. The normal output of the Calumet and Hecla is 3000 tons monthly. The Black Hill Mine now produces 1500 tons of copper monthly, and even were the Hecla mine gutted by fire, other portions of the mine could easily furnish 2500 tons a month, or at a pinch, perhaps 3000. The recent increase in the price of copper was not caused entirely by the fire. Ten cents per pound is too low a price. Twelve or 14 cents is the normal price. The price cannot be permanently kept up above 14 cents. The bulls will be crowded to the wall, a large amount of copper be dumped on the market, and the price fall to 10 cents. Again, the speculation is bad for the producers whatever way it turns out. Mining men in the copper districts are not speculators, but buy stocks for investment. Mines are selling copper as fast as it can be produced at present prices. Very few mines closed down will start during the winter, but if prices harden to 13 or 14 cents in the spring mines now closed may begin work. Working mines will increase the product for 1888 by about 1000 to 1500 tons a month. The increase will come mainly from the Tamarack and Calumet and Hecla. With copper at 10½ cents the Atlantic, Franklin and Huron mines find it hard sledding to make any money. The Quincy makes money at any price. Copper cannot be produced below 10 cents. The competition between the Rio Tinto, Anaconda and lake mines has put copper too cheap, but the owners of these mines have seen their folly and will keep the prices up to a reasonable figure. The increase in the use of copper will keep the price up to at least 12 and perhaps 14 cents. The policy of the Calumet and Hecla is not to force the smaller mines to the wall. It would like to see a pooling arrangement made by the mines, but think it doubtful if it can. The Quincy jumped over the traces and broke the last pool.

Occasional figures for the evaporative powers of boilers, derived from test, which conflict strangely with theoretically possible results, prominently bring out the fact that in the construction of the apparatus used for testing fuels for heat value there is yet much room for modification and improvement. It is daily growing more important that new fuel tests should be made under conditions which would give them more practical value. A proof that coal was to a moderate or even slight extent better than it is supposed to be would clear up some puzzling and obscure points about steam boilers.

### The Galloway Die Stock.

We annex an engraving of an improved die stock made under the Galloway patent by the Diamond Emery Wheel and Machine Company, of Providence, R. I. The center-piece is made of malleable iron cored out through its entire length, the ends of which are tapped to receive gas-pipe for handles. Each die is set in this center-piece so that a hole, which serves as a bushing or guide, appears directly opposite to receive the same size of pipe as the corresponding die cuts. The dies are made in the Briggs standard, ground to an exact size and held in place by set screws running in from each side, and may be readily duplicated at any time with new dies. The tool, it will be noted, is very simple and well adapted to its work.

### A Curious Engineering Operation.

Referring to a curious engineering operation which has just been carried out in France, near the Belgian frontier, the *American Architect* says:

Near the town of Condé the River Haine, a navigable stream, flowed until recently

which is sure to collect in the lower part of the siphon does not appear, but it is probable that some simple apparatus will be used for extracting it, and there is in this case no navigation to be looked out for.

### The New South Australian Tariff.

The following is the new tariff for iron, steel, hardware, &c., as finally agreed to:

THE SCHEDULE.		£.	s.	d.
Express wagons and wagons for carrying goods, mounted on springs or thorough braces, each.....	15	0	0	
Galvanized and iron cordage, cwt....	0	3	0	
Galvanized iron, corrugated unmanufactured, ton.....	1	10	0	
Iron or steel columns, girders (rolled or riveted), pipes, tubes, ton.....	2	0	0	
Lead (pipe), shot, cwt.....	0	2	6	
Nails, screws, not prepared ready for use, cwt.....	0	2	0	

Air bricks; bedsteads, beer engines, bellows and bellows with forges, bells (all kinds), bench screws; blacksmiths' tongs, blocks, pulleys and sheaves; boilers, land and marine; bolts and nuts over  $\frac{1}{8}$  inch diameter, boring rods and tools, bricks (except Bath and Dinas), bridges and

(including corn crushers); metal services, spoons and forks, except steel table forks; plow and scarifier shares, 15 per centum ad valorem.

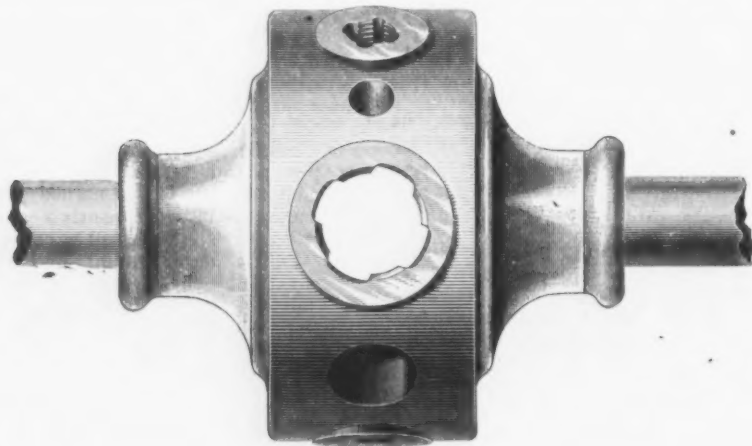
### Free List.

Anchors over 3 cwt., antimony in ingots, and anvils; bicycle steel backbones or tubes and rims unfinished; brass, bar, sheet, rod, and rolled; bricks, Bath and Dinas; chain cables and traces, not galvanized; coal, lignite and coke; combined mower and binder; copper and yellow metal sheathing, sheet, bar, rod, and nails; copper wire covered; copperas; cordage—viz., steel wire; crucibles; door knobs and handles, brass; drawing pins; engines, gas, portable and traction, dry-air refrigerating machine without engine; skins, raw; hinges (except T and hook hinges); hooks, reaping; hollow-ware; hose and tubing, india-rubber.

India-rubber buffers, washers, and tires for bicycles; iron, bar, rod, galvanized, galvanized iron, droppers, galvanized sheet, plain, girder gates, unmanufactured, hoop, ore, pig, plates, rails for rail and tramways, scrap, sheet, tubing cased with brass, wire, wire galvanized, wire netting of all kinds, and wrought-iron tubes and pipes under 6 inches diameter; ironmongery, minor articles of, not enumerated; knives; latches and locks, all kinds of; lead ore, pig and scrap.

Machinery for carding, spinning, weaving and finishing manufactures of fibrous material, machinery used in the manufacture of paper and for felting (including wire cloths and felts), roller machinery and machinery connected therewith, not enumerated, for flour-milling purposes, printing presses and machines, lathes over  $3\frac{1}{2}$  tons weight, drilling machines over  $2\frac{1}{2}$  tons weight, planing machines over 6 tons weight, punching machines over 7 tons weight, shearing machines over 7 tons weight, plate-bending machines over 5 tons weight, slotting machines over 4 tons weight, shaping machines over  $2\frac{1}{2}$  tons weight, book-binding and ruling machines (except engines and shafting), magnets; metal toe-caps, heel-plates and boot protectors; millstones, muntz metal. Rivets, steel, iron or galvanized. Saddlers' bindings and ironmongery; sash fasteners and lifts; scales, balances and weights, not enumerated; scythes, sewing machines and slabs, shaft tips, shale, shears; shoemakers' nails—viz., sparrow-bills, wrought and cast tips, bright and blacy mal. hobs, wrought hobs, nuggets, Hungarian, cut sprigs, steel bills, tangles, iron and brass rivets; shovels and spades, sickles; slot irons for carriage building; springs; steel, bar, rod, sheet, fencing wire, standards and droppers, and steel cranks and tires, in the rough, for railways and tramways; chains, sulphate of copper. Tanks, iron (except galvanized), corrugated, tapes; telephones; tin, block, ingot, sheet, plates and tin plates decorated; tinfoil, tools (not otherwise enumerated), tubing metal (except iron), type. Wire; hoops for casks. Zinc, ingot, perforated and sheet.

A large percentage of the interest on railroad bonds is payable in January and July of each year, and hence the current month is an important one in this respect. A careful compilation of the railroad bonds on which interest is payable during the current month, made by the *Stockholder*, discloses the fact that interest is due on about \$1,600,000,000 bonds, while, not including the amount in default, the interest actually payable aggregates a little over \$39,000,000. At the same time there is nearly \$15,000,000 due and payable as dividends on railroad stocks, the sum of which is in round numbers \$740,000,000. In other words, interest and dividends are payable principally now on \$2,340,000,000, not including the amount in default, the aggregate of such payments being a



IMPROVED DIE STOCK.

Made by the Diamond Emery Wheel and Machine Company, Providence, R. I.

into the larger River Scheldt. The latter stream, near the mouth of which is the great seaport of Antwerp, is of much importance to inland navigation, and the shallower portions have recently been "canalized" by means of embankments, so as to improve and maintain the waterway. In canalizing the Scheldt it was found advisable to allow the Haine to cross it, reaching a different outfall beyond, instead of losing itself in it at the original confluence, and the dikes were arranged in this way. Experience showed, however, that the Haine brought down so much alluvium as to affect sensibly the channel of the Scheldt at the intersection, and dredges were kept in almost constant use to keep the navigation clear. To obviate the necessity for this, it was decided to carry one river entirely under the other by means of inverted siphons, and the work has just been completed. Five riveted wrought-iron tubes are used, each 11 feet in diameter, dipping about 10 feet below the usual water-level and buried in a mass of concrete, which is formed to the profile of the bed of the Scheldt. Each siphon was made in three pieces, the middle portion weighing 20 tons and the end pieces 10 tons each, and, after diverting temporarily the course of both rivers, the tubes were laid in place, riveted together, and the concrete filling put in. At the same time the tubes were lined with a ring of brickwork covered with cement, and when all was finished the water was turned through them. What will be done with the silt

bridgework, manufactured; bright wire-ware, Britannia-metal ware, British plate; carriages, carts, wagons and all vehicles not enumerated; castings not enumerated, cast-steel drills; chisels, cold; corkscrews, wire and steel; copying and embossing presses; cork and other ship fenders; dumb-bells; engines and parts (except gas, portable and traction engines, and pressure gauges); forges and forge backs, gas tongs, garden rollers; grates, stoves, ranges and ovens and parts thereof; hammers (napping, quartz and spalling); hoists and lifts, horse-powers and parts, hydraulic presses, ice-making and cooling machines; iron brackets, doors, gates, kibbles, lasts and galvanized-iron manufactures; japanned ware; jacks, lifting; kettles and pans (copper and brass); knife cleaners; gasaliers and parts; leatherware of every description not enumerated; machines, washing, and mangles; manufactures of metals not enumerated (except plow and scarifier shares); millbands, leather moldings, gold, silverware, picks and mattocks; plate and plated ware not enumerated, pliers, punching machinery, quarry mauls and picks, refrigerators; safes, iron; sieves, staples, sashweights, scrapers; shafting, cold rolled or turned, and couplings, tiles, tinware, tiring plates, troughing, wedges, wheels and axles, winches, wringers, weighbridges, over 20 cwt., 25 per cent. ad valorem.

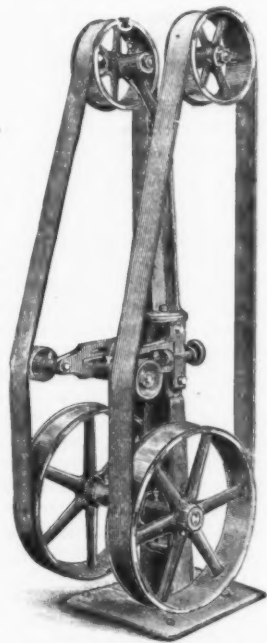
Machinery not enumerated, marble, stone, slate (wrought), 20 per centum ad valorem. Agricultural implements not enumerated



little over \$54,000,000. This does not include the interest on Government bonds, amounting to \$9,368,000, a small portion of which, however, has already been anticipated by the Secretary of the Treasury under his circular issued last summer. Some of the chief municipalities of the country make this also one of the principal dates for paying interest, the aggregate of such payments due now being about \$4,000,000; there are also dividends on bank stocks in New York, Philadelphia, Boston and Baltimore, which in the aggregate exceed \$2,000,000. The total payments for interest and dividends actually to be made will, therefore, amount to nearly \$70,000,000.

#### The Hall Belt Polishing Machine.

The Hall Mfg. Company, Twelfth and Buttonwood streets, Philadelphia, Pa., are putting on the market a new machine designed for polishing straight or irregular surfaces, and furnished to run one or two belts, as required, from 1½ to 3½ inches wide. The engraving which we annex shows the construction adopted. The height of the machine from the floor is 6 feet, and it covers a floor space of 20 x 20 inches. The total weight, with countershaft, which is furnished with the machine, is 500 pounds. The length of each polishing belt is 13 feet, and it is designed so that four workmen can use it at the same



*Belt-Polishing Machine, Made by the Hall Mfg. Co., Philadelphia, Pa.*

time. The countershaft should be run 250 revolutions per minute, giving a speed to the polishing belt of 3250 feet per minute. A special appliance is furnished to take up the lost motion of the belts, so that they are kept constantly at the proper tension for effective work. This is further provided for by a device for lowering the bottom pulleys.

Messrs. Haines, Jones & Cadbury, 1136 Ridge avenue, Philadelphia, Pa., announce by circular to their employees the results of their first year of profit-sharing. Each person who has worked with them for six months will receive 7½ per cent. on his total wages for the year. The aggregate wages of the 250 employees have been \$125,000, so that the dividend will amount to \$9375, payable in cash on the 21st of this month. They add that those who wish to leave the amount with the firm can do so, interest to be allowed them at the rate of 4 per cent. per annum.

#### The Rise in Copper as Affecting Manufacturers.

The following opinions have been gathered from manufacturers in Waterbury, Conn., on the effect which the rise in copper has had upon the manufacturing interests of the Naugatuck Valley. It is estimated that upward of 30,000,000 pounds of copper are used in Waterbury in one year, and the rise in the price of copper is of general interest there. At Benedict & Burnham's, the largest brass concern in the country, E. L. Frisbie, Jr., said:

"I understood from those on the ground that the fire in the Calumet and Hecla mines would not reduce their output more than one-third. There are two or three other shafts that have not been worked to the fullest capacity. Of course the chief cause of the rise of copper from 10½ cents to its present price of 17½ or 28 cents is due largely to the manipulations of the syndicate. It is impossible to say just who compose the syndicate, but it wouldn't be strange if the Rothschilds were behind it. It is also surmised by some that the Spaniards are in the ring to cut down the production of the Chili mines. The chief effect of the rise is seen in the small orders that come. Concerns that were wont to buy three and six months ahead buy now for only a few weeks ahead, and they buy pounds where they bought tons. The reason is that they have a hope that there may be a break in the market before many days. Were it certain that the price would remain up where it is business would go on as before. It is possible that in some business the cheaper metals may be substituted for copper, yet not to any very great extent, unless with telephone and telegraph wire makers. If the price remains up Waterbury industries will naturally be effected to the extent that they will turn out less work, unless, of course, the price becomes stable."

Matthews & Willard, the Scoville Mfg. Company and Randolph & Clowes confirmed all that Mr. Frisbie said about the effect on manufacturers. Orders have fallen off about 50 per cent. These concerns, which consume about 2,500,000 pounds a month, will not be in the market for copper for the next 60 or 90 days if the price remains where it is. Metal "in process" is now being used to meet old orders rather than buy new. Some of the concerns will close down some departments rather than fill orders at a sacrifice. The only prospect for a break in the market, in their opinion, is that the market will become glutted through increase in production and decrease in consumption. Time was when these concerns could dictate the price of brass to the world, but now there are so many small concerns scattered about that that is rendered impossible. Nevertheless their action must have some effect on the course of the syndicate.

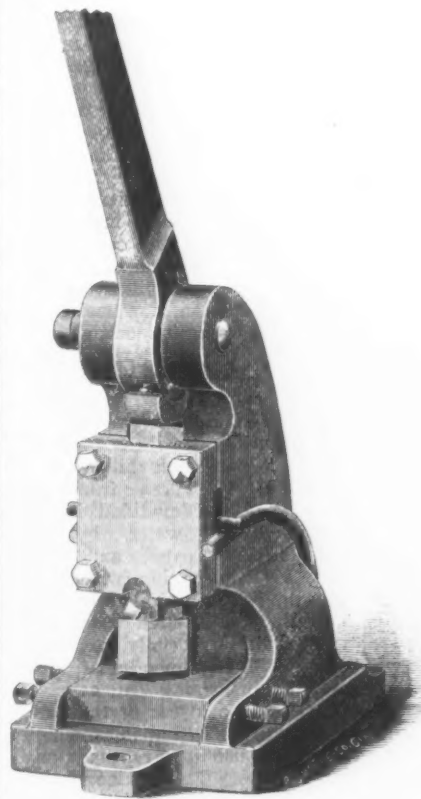
#### Photography of Moving Projectiles.

—Some instantaneous photographs of bullets in motion have recently been taken in Germany by Herren Mach and P. Salcher. The object of the experiment was to determine the waves formed in the air displaced by the motion of the bullet. The first experiments, however, gave only negative results, but this was attributed to the fact that the bullet had only a velocity of about 780 feet per second, which was not sufficiently rapid to cause any very marked disturbance of the air in its path. Experiments were, therefore, made with the Werndl rifle, giving a velocity of about 1430 feet per second; with the Werndl carbine, with a velocity of 1110 feet per second, and the Guedes rifle, with a velocity of 1730 feet per second; and with these very distinct photographs were obtained, showing in the clearest possible manner

the character of the waves set up by the bullet in its passage. From these it would appear that the air flows away from the bullet in hyperbolic lines, while a vacuum is produced immediately behind it.

#### The Sampson Saw Gummer.

For gumming or retoothing band-saw blades the Baldridge & Hogan Saw Company, 9 Vine street, Cincinnati, Ohio, are making what is known as the Sampson gummer, which we illustrate herewith.



*Band Saw Gummer, Made by the Baldridge & Hogan Saw Co., Cincinnati, Ohio.*

By simply bolting the device securely to a bench it is ready for use. Its working parts are all made of steel, making it a strong and durable punch. It will cut any size tooth wanted, and cut them so cleanly and smoothly that they will need but little filing. With it a band-saw blade can be toothed in a few minutes and made ready for the mill.

Work on the new window glass works at Penn Station, on the Pennsylvania Railroad, about 30 miles from Pittsburgh, was commenced on Friday, the 6th inst. The plant, when completed, will be operated by a glass-manufacturers' syndicate of Pittsburgh, of which H. Sellers McKee and James Chambers are the principal members. The process to be used for making the glass is known as the continuous tank system, patented by Mr. Siemens, of furnace building fame. There will be no melting pots used, as all the glass will be made in and taken out of these tanks or melting furnaces. In construction they are somewhat similar to a cupola in a foundry or Bessemer converting mill. The melted glass for the entire turn or heat will be obtained from one of these furnaces. There is only one more factory of this kind in this country. It is located at Moselle, Ill. The plant at Penn Station will consist of six buildings. All of these will be used as window-glass factories. It is calculated that it will take at least 1200 men and boys to run the entire plant when it is completed.

### The Interstate Commerce Law.—I.

The Commissioners have made their first annual report to Congress through the Secretary of the Interior, and some discussion of the provisions of the act may be expected from that body. In the Senate several bills have been introduced amending the act. In view of these facts some brief statements of the points involved may be of interest.

#### CARRIERS.

Section 1 of the act limits its operation to railroad carriers or to railroad and water carriers when a continuous shipment under a through rate is made over such combined rail and water route. Carriers wholly by sea, by canal or by lake are not covered by the terms of this section. In their report just mentioned the commission call the attention of Congress to this omission, with the remark that equity would seem to demand that the provisions of the act, if right in themselves, should be extended to include all instrumentalities of transportation. As a matter of fact every shipper knows that carriers by water have never given such causes for complaint as have our rail lines, and so practically their regulation is a matter of minor moment. The English act of 1854 covers every canal line upon which tolls are levied by authority of Parliament. Under the law of 1868 these provisions were extended to include every species of steam vessel worked by a railway or canal company, or to which such railway is a party. Our law is taken from the English acts named but modified in the case of carriers by water by excluding the inland canal and lake traffic except in combination with railroads. It would certainly round out the law theoretically should such water carriers be included. Especially so, since Senator Cullom, in his amendment, proposes to include all sleeping car, express, drawing-room car, stock car or tank car companies, and all other companies which furnish for public use upon railroads any facilities of carriers. The justice of this no one will dispute. In proportion to their opportunities, the officers of such companies are as liable to be governed in their charges by wrong motives as the officers of the greater railroads, and in any case no harm can come from giving the fullest publicity to the affairs of all carriers, great and small, who form any part of our public system of transportation.

There is no denying the fact that socialism—using the word in a proper sense—is making rapid progress in public opinion, and that our tendency is directly away from the Jeffersonian maxim, "That Government is best which governs least." Aside from the proofs as seen in our Interstate law, a striking corroboration is shown in the several bills before Congress to establish Government telegraphs. How far our republic should go in this direction is a question of growing importance, and for its happy solution a more thorough education of the people in the principles of political economy is necessary. It would seem the wiser plan to put our present telegraph system at first under the Interstate Commission.

#### REBATES.

By the second section all forms of rebates and drawbacks are forbidden. The commission are right in quoting this section as specially important, and unquestionably it has had its effect in giving steadiness to the business of the year and confidence to the mercantile public. Some idea of its beneficial effect upon the railroads can be drawn from the fact that, with rates nominally nearly the same, the earnings have been larger, the savings from lower special rates being a large part of such excess of revenue. It should not be forgotten that any special or commodity

rate which was lawful and right in 1886 is lawful and right now. The new law only prohibits such special rates as are unjust and secret. One of our systems had been carrying paving-blocks in large quantities from New England to Western cities at a low rate, since only at a low rate could such an article be carried and sold. Ostensibly on account of the law the rate was withdrawn—unnecessarily, since no provision was violated. This is an illustration of the crude thinking in which even good railroad men indulged. Happily, now, larger views are held, although the law is even yet used as a bugbear when some shipper asks for a rate which will let him compete. The railroads have appointed a committee to draft an amendment to the law, forbidding misdescription of freight by which some shippers get a lower rate than others—practically a rebate. It is a notorious fact that this practice, if not originated, was encouraged by the railroad agents, who found this an easy means of cutting the rate. It will not do to blame only the shippers, who generally shipped according to their arrangement with some railroad official. The effect of such practices was demoralizing to all concerned, and if it is clear that we are to have a certain remedy against unjust tariff charges, so that carriers will not have everything their own way, regardless of effects upon manufacturing and trade, then such a law, forbidding false description of shipments, will be welcomed.

It is possible for a railroad company to evade the section forbidding rebates by their system of classification. It is possible to practice the very worst discriminations in this way under the very letter of the law itself. It is a very difficult and delicate subject, this adjustment of one article or one trade with another, and many plausible reasons can be given for almost any classification. In Germany most of the articles in small lots take one general rate. This is an easy way of getting over the difficulty, but a tariff which puts the same rate upon butter as upon coal would never be accepted by our progressive tradesmen, while with any subdivision must come disputes, with chances for wrongs and errors. Moreover, our country is so vast, and the interests of different sections so diverse, that we do not see how any uniform system of classification could possibly be devised which should do justice to the special needs of each section. We question the wisdom of the suggestion of the commission that such a uniformity is at present desirable. Upon our east and west roads we should have such a system as would give a plain rate upon shipments going any distance in one direction, but we would not yet advise the compulsory adoption of the same classification and rate upon the same goods in the opposite direction. Meanwhile the old practice of favoritism between merchant and merchant by means of secret rebates has, let us hope, passed away forever.

It appears that special attention is being paid in France and England to a more general substitution of iron and steel for wood, wherever practicable, in manufactured articles, such, for instance, as building materials, boxes and packing cases, barrels or casks, carriages, carts and other vehicles, furniture, fencing, railway work, sheds, signal boxes, telegraph poles, &c. In France there have recently come into use hollow iron window frames and doors, which are said to be light and strong, and of far greater durability than could ever be assumed of wood. There is no reason, too, it is thought, why corrugated barrels of iron or steel should not be used for holding liquors, since milk and preserved fruits and other articles are kept in cans. Steel is finding much favor among carriage builders, but there is still much

prejudice against the metal being used in the manufacture of furniture. The general adoption of steel sleepers is warmly advocated by some, as is also the employment of iron and steel in the construction of railway cars, and the erection of wooden sheds, signal boxes, &c., by railway companies, as at present, might, it is urged, be profitably and economically substituted with steel.

### The Paris Exhibition in 1889.

The following is a synopsis of an editorial in the *London Engineering*:

Some English and American journals have from time to time of late given circulation to hostile and unfounded criticism on the great demonstration which has been organized by the French Government for the year 1889. \* \* \* The statement has been circulated that the undertaking is only semi-official, that it is the work of speculators and manufacturers, and that it is not even under the patronage of the French Government. Almost as many absolute untruths as there are words. This is how the exhibition of 1889 has been organized: It was based upon a Presidential decree, dated the 8th of November, 1884, which decided that the Exposition Universelle should be held from the 5th of May, 1889, to the 31st of October following. Then a law was passed on the 6th of July, 1886, which approved and confirmed a convention entered into between the Minister of Commerce and Finance, as representing the Government; the Prefet of the Seine, representing the Ville de Paris, and the Governor of the Cédit Foncier, acting as the representative of the Guarantee Association. By the law the amount to be contributed by the Government was fixed at the sum of 17,000,000 francs; the amount voted by the Ville de Paris was settled at 8,000,000 francs, and the balance of 43,000,000, which it was considered would be necessary to carry out the undertaking, was to be supplied by the Guarantee Association. In framing this law, it was very wisely considered that this distribution of liabilities would admirably allot the responsibility where it probably belonged—between the nation, the municipality of Paris and the representatives of capital. Lastly, a Presidential decree, dated July 28, 1886, nominated the Minister of Commerce and Finance himself as General Commissioner of the Exhibition. Probably no exhibition was ever initiated on a sounder or more official basis, and the statement that it is not recognized by the Government, but is the work of speculators, is opposed by the fact that it has been based on two Presidential decrees and a special act, each phrase of which emphasizes the supreme direction of the French Government in all concerning its organization, construction, management and general control. All these facts are matters of history accessible to all.

The standing and character of the Exhibition—not semi-official, but Governmental in all respects—are absolutely well defined and minutely specified in the decrees and acts already alluded to. It is the Minister of Commerce who is the Commissioner-General. Under his orders three directors, all of high standing and reputation—MM. Alphand, Berger and Grison—have been placed at the heads of the three main departments of construction, management and finance, and, despite the statements to the contrary, the most absolute accord has always existed between these responsible officers. The detractors of the enterprise say that the buildings will not be ready because the funds will not be forthcoming. The undertaking is subventioned by the nation and by the city of Paris. Eighteen million francs were asked of the Guarantee Association, which responded by placing 24,000,000 francs at



the service of the department. But it is urged that the guarantors are nobodies—speculators who wish to exploit to their loss possible British and American exhibitors. Let us see who they are. This charge, then, is first made against five of the great French railway companies who head the list each with 500,000 francs, and then against the Bank of France, which guarantees another 500,000 francs. The next *tripoteurs* are the Crédit Foncier, the Banque d'Escompte, the Comptoir d'Escompte, and the Société Générale, each guaranteeing 300,000 francs. The next persons of evil repute of no particular profession—*chevaliers d'industrie*, in short—are represented by the Magasin du Louvre, which is responsible for 600,000 francs, and the Bon Marché for 500,000 francs. To glance now at guarantors for smaller sums. Among them we find MM. Ménier, 150,000 francs; MM. Schneider, of Creusot, 150,000 francs; MM. Cail & Co., 100,000 francs; the works of Fives-Lille, Commentry and St. Chamond, each 100,000 francs; M. Grühe de Strousberg, 100,000 francs; the Génie Civil, 83,000 francs; fifty Chambers of Commerce in France, each 50,000 francs; and eighty-four others, each 25,000 francs.

But we have carried our list far enough to show that the guarantors are men and associations of the greatest wealth and highest position in France, and that the statement that money will not be found is as false as the assertion that those responsible are persons of "evil repute." And if the funds are ample why should not the work be ready by the stipulated time, and what is there in the present state of progress to justify such a prediction? The truth is that the exhibition buildings are far more advanced than they were in 1876 for the great exhibition which was held in 1878. All the foundations in the Champ de Mars are finished, and one-third of the structures; the Eiffel tower has been raised to the level of the first story. In short, the state of progress speaks strikingly for itself. But now we come to one of the great arguments advanced by the enemies of France and of the 1889 exhibition. All foreign countries have refused any official recognition. And this objection carries a certain weight far more specious, however, than real. Admitting that the date of the exhibition will coincide with the fêtes to be held to celebrate the centenary of the French Revolution, it was not to be expected that a spontaneous and enthusiastic adherence of monarchical Governments would be found, and republics alone could with propriety be represented officially. As a matter of fact, nearly all the republics in the world have notified their intention to take part, including the whole of South America, except Brazil. The question of official participation will come before Congress at Washington shortly, and the adherence of Canada is almost certain. Italy, Belgium and Holland will all be present by their official representatives. In most other countries, of which the Governments have held aloof, the formation of syndicates and commissions will take place, and even where foreign Governments may have a hostile feeling the personal interests of individual exhibitors will take no account of them, in view of the benefits likely to arise from their participation in the undertaking. But if not one foreign exhibitor was present at the Champ de Mars, France is so rich in natural resources, in industries, in science and in art, that she could produce such a national exhibition as the world has never seen, one which would fully demonstrate the power and wealth on which the nation is founded.

The methods that have at various times been proposed by inventors for furnishing power for propelling submarine boats have uniformly failed to give satis-

factory results. The plan most commonly adopted is to work the machinery when under water by means of "accumulated" steam. Thus in the Nordenfeldt no less than 8 tons of heated water are used to store up energy. Lieutenant Hovgaard, however, of the Danish navy, proposes to provide the boat with both steam engines, electromotors and accumulators. When at the surface the boat would be propelled by steam alone, which would also be used to charge the secondary cells, and these would be employed in driving the boat when completely immersed.

#### Annual Output of Locomotives and Rolling Stock.

The accompanying table has been compiled by the *Railroad Gazette* from figures furnished by the principal railroads and builders of locomotives and cars in the United States:

Annual Output of Locomotives and Rolling Stock, 1880-1887 Inclusive.

	1887.	1886.	1885.	1884.	1883.	1882.	1881.	1880.	Total.
Locomotives built by 19 private firms.	2,044	1,436	800	1,149	2,067	2,282	1,977	1,405	13,160
Freight cars built by 15 car works.	12,131	7,870	2,073	3,043	9,756	15,636	15,961	10,588	77,658
Freight cars built by 29 railroads.	4,014	2,225	1,482	2,634	4,031	2,943	4,085	3,250	24,664
Total.	16,145	10,995	3,555	6,277	13,787	18,579	20,046	13,888	102,322
Coal cars built by 15 car works.	11,644	5,067	1,729	4,425	3,927	5,035	6,535	3,510	41,872
Coal cars built by 29 railroads.	2,412	1,079	869	1,213	1,890	1,238	1,565	196	10,462
Total.	14,056	6,146	2,598	5,638	5,817	6,273	8,100	3,706	52,334
Day, passenger, baggage, mail, express and caboose:									
15 car works.	496	344	209	257	406	294	286	292	2,584
29 railroads.	167	112	50	117	181	164	121	103	1,015
Total.	663	456	259	374	587	458	407	395	3,599
Sleeping, dining, hotel, buffet cars, &c.:									
15 car works.	65	53	53	64	49	50	65	16	415
29 railroads.	2	4	7	8	11	10	10	1	53
Total.	67	57	60	72	60	60	75	17	468
Average number of freight cars built per locomotive.	7.9	7.6	4.4	5.5	6.7	8.1	10.1	9.8	7.9
Average number of coal cars built per locomotive.	6.9	4.3	3.2	4.9	2.8	2.7	4.1	2.6	4.0

The figures, as to locomotives, do not include any built by railroad companies at their own shops, but probably represent pretty correctly the total output of private firms for the eight years, 1880-87, inclusive, embraced in the table. No less than 19 firms of locomotive builders have kindly replied to the queries. Only two firms declined to furnish any information, and no reply has as yet been received from a third firm. The total output of these three builders would, in all probability, not much exceed 100 locomotives during 1887, and would probably fall below that figure for any previous year. Eleven out of the 19 firms contributing to the returns built more than 50 locomotives each during 1887, and a similar number of firms have averaged over 50 engines per annum for the eight years 1880-87.

It will be seen that the total number of locomotives built in any one year is subject to considerable fluctuations, and the experience of individual firms indicates even wider variations. One firm built nearly five times as many locomotives in 1887 as in 1884, while another firm built three times as many in 1887 as in 1884. It will be seen from the table that the total output in the worst year, 1885, was 800 locomotives, or only 35 per cent. of that in the best year, 1882. Similar fluctuations are observable in the returns of nearly every firm, the smallest variation being in the case of one firm, where the lowest output in 1880 was 48 per cent. of the highest in 1887. The improved output of 1887, as compared with 1886, was shared by every firm contributing to the returns, all showing an increase of at least 10 per cent. in the output and many over 50 per cent.

The increased weight and power of the locomotives built during the past few years

must be taken into consideration in examining these figures, and there can be little doubt that the 2044 locomotives built during 1887 represent a greater weight of metal and more haulage capacity than the 2277 locomotives built in 1882, many of which were for the narrow gauge. The gradual increase in the number of engines with cylinders of 18, 19 and 20 inches diameter has been very noticeable of late years, and when this fact is taken into consideration the year 1887 shows a slightly smaller increase in numbers, but probably a larger increase in power, than even the prosperous years 1882 and 1883.

The returns as to freight cars are unfortunately not so complete as those relating to locomotives, and cannot be taken to represent the total annual increase for the whole country. The relative increase in one year as compared with another is probably fairly shown. The figures at the bottom of the table seem to indicate that an unusually large proportion of coal cars

were built in 1887, and that the number of freight cars built bears an average proportion to the number of locomotives built. During the three years 1880, '81 and '82, an unusually large number of cars was built in proportion to the locomotives. The result of this over-production was felt in the great depression in freight car building during the years 1884 and 1885, when the production of cars diminished in a faster ratio than the production of locomotives. The fact that 15 large car works only built 2000 freight cars in 1885, against nearly 16,000 in 1881, shows the severity of this depression. The returns for passenger cars are also incomplete, and cannot be taken as a guide to the total output, though the relative production of one year compared with another is probably fairly indicated.

Taken as a whole, the returns certainly show that the locomotive and car building industries are in a fairly flourishing condition, and the continued extension of railroads and the national growth of traffic on lines open will probably continue to provide plenty of work for locomotive-makers and car-builders during the present year and for some time to come. Fluctuations must, however, apparently be expected in such a business, and must necessarily affect all calculations as to probable profits.

John Wolcott Andrews, of the firm of King & Andrews, iron founders, Chicago, died at San Antonio, Texas, on the 30th ult., aged 35 years. He was a graduate of Yale College, of the class of '71, and was very highly esteemed in business and social circles. He was buried on the 4th inst. from the home of J. McGregor Adams, President of the Adams & Westlake Company, Chicago.

## THE WEEK.

A resolution in Congress, introduced by Senator Hoar, provides for a world's exposition at the national capital in 1892, and thereafter a permanent exposition of the three Americas in honor of the 400th anniversary of the discovery of America. Referred to Select Committee on Centennial Celebration.

Manufacturing corporations in Fall River, Mass., pay dividends this year making a total of \$1,458,540, or about 8½ per cent. on the capital stock of \$17,768,000, as compared with \$1,047,000 for the year 1886, when the capital stock was about \$2,000,000 less.

Railway corporations as a whole do not seem to have enjoyed that high degree of prosperity that might have been expected in consideration of their increased earnings under the Interstate law. The *Railway Age* publishes a record of foreclosure sales and receiverships in the United States, showing that no less than 31 different railways, 5478 miles long, and representing an apparent capital investment of \$328,000,000, were sold in bankruptcy during 1887. The old, conservative and wealthy Eastern States of New York and Pennsylvania furnished nearly one-third of the roads that have come to grief.

Under the new regulations for dispatching merchandise arriving in the city of Mexico, freight coming by railway from Vera Cruz has to be taken over a special track to the Santiago Custom-House. Freight arriving over the Central Railway will also go to the Custom-House for dispatching.

Late details of the Chinese floods make the story one of the most terrible in history. What was a beautiful, populous district of 10,000 square miles is now a rolling sea. At least 3,000,000 people are homeless and absolutely destitute of the bare necessities of life, while it is thought that the loss of life will reach 750,000. Court and business circles in Peking, Canton and other centers are making strenuous efforts to mitigate the suffering that has been inflicted. The full extent of the disaster can only be conjectured.

The Turkish Government has apparently determined to crush out of existence the schools and other educational institutions in the country, for which Americans have contributed liberally. Among the most prominent is the Roberts College, a fine structure overlooking the Bosphorus, for which the late Christopher R. Roberts, a prominent merchant of New York, made munificent endowments. The American Minister protests against the enforcement of the law.

It is learned at the Navy Department that the Russian Government contemplates the attachment to its legation in this country of an engineer officer, whose duty it will be to report to his Government upon the development of engineering science in the United States, with special reference to marine engineering.

The new United States steamer *Nipsic* made her trial trip on Long Island Sound under the inspection of the Naval Board, and is reported to have performed satisfactorily.

A span on the new central viaduct now in course of construction at Cleveland, Ohio, fell in consequence of the supports being knocked away by a supply car which was accidentally pushed off the end, and two workmen were killed outright.

All the railroads running into the Gogebic and Marquette iron regions have reduced rates on iron ore to lake points 20 per cent.

The coastwise steamship lines in the Charleston, Savannah and New Orleans trade are expecting the renewal of an active opening business before the end of

February, as the disposition to develop trade seems to be very general in almost all sections of the South. The Old Dominion line has just closed the best business year since the origin of the company. A new feature is an arrangement just put into force by which every steamer of the Alexandre line leaving this port shall visit Mexico after touching at Havana.

During the year ending December 31, 1887, there were built in Maine a total of 41 vessels, with an aggregate tonnage of 17,454, as against 42 vessels with a tonnage of 16,365 in 1886. The prospects for shipbuilding in the State during the coming year are better than a year ago. It is a notable fact illustrative of the growth of lake in contrast with ocean tonnage that Cleveland alone built more tonnage and better tonnage last year than the whole Pine Tree State. Cleveland built 17 vessels with a total net tonnage of 19,521 tons.

Ten Southern States, from which statements have been collected, report that the increase of assessed valuation in the four years between 1876 and 1880 was \$41,087,437, between 1880 and 1886 it was \$571,899,722, and in the single year 1887 the increase in 10 States was \$202,213,564.

An explosion in B. H. & H. G. Cramp's brass foundry, in Philadelphia, on Monday, seriously injured four men. They were hoisting a crucible containing 150 pounds of molten brass, when the bottom suddenly dropped out and the men were covered with splashes of liquid fire. Presently a stream of metal flowed into a reservoir of water, and a terrific explosion completed the havoc. One of the men cannot survive.

The New York Produce Exchange will erect an extension of their building on an adjoining lot now yielding no income. The plan is to have a company lease the ground from the Produce Exchange and put up a building with a fund to be raised from the issue of \$300,000 in bonds.

Wm. E. Baker, the sewing machine manufacturer, died in Boston 5th inst., aged 60 years.

Mare Island being the only naval station on the Pacific Coast, a proposition is now before Congress to appoint a commission to examine the coast line as far up as Alaska, with the object of selecting a suitable naval site, having a due regard for commercial necessities. Puget Sound is named as peculiarly possessed of all the requirements. With its hundreds of miles of navigable channel and its numerous harbors it would be one vast harbor of refuge for naval or commercial vessels in war and in peace.

The fact that Italy is looking to the United States for her future supplies of steel guns and armor plate, in order to avoid embarrassments which might arise from a war in Europe, has already been noticed. The *Philadelphia Press* remarks further: "Spain will be the next. Italy began by requiring new guns and armor plate to be made in Italy and the great steelworks at Spezzia were the result. The Spanish Cortes, which adjourned 10 days ago, voted \$45,000,000 for new ironclads and their armament, and put in a provision requiring both to be manufactured by Spanish labor. The Armstrongs, accordingly, will do what was done at Spezzia, put up a new plant at Bilbao, or some other point on the Gulf of Biscay. This is another job lost to the English workmen at Elswick, and the steelworks established at Bethlehem promise to do still more to divert Continental orders away from England."

A report upon the sanitary condition of the City Hall, by President Bayles, of the Board of Health, saying that the conditions described by the inspectors were very bad, demanding immediate attention,

has started an active movement looking to a correction of the existing evils. The City Hall was built long before the old Manhattan Water Works were constructed and without any reference to water supply or drainage, and the existing sewer and drain pipes are said to be arranged as nearly as possible in defiance of all sanitary rules. A number of men are now at work making the surveys preliminary to designing a new and complete system of plumbing, drainage and ventilation, in which the various parts shall bear some relation to each other, and the whole shall form a system adequate for all sanitary requirements.

All the State convicts in Alabama have been let out on ten year contracts, to the Tennessee Coal, Iron and Railroad Company. They number about 600, and the average price is \$13 per month each, which is more than the State has ever before received. The convicts will be worked in the Platt Coal Mines, near Birmingham. The contractors agree to construct new prisons in accordance with the best modern plans, as well as schoolrooms for the convicts and dwellings for the teachers, and to pay the teachers themselves. The Pratt mines supply coke for many of the furnaces in Alabama.

The shipping tonnage of the Maritime Provinces—Nova Scotia, New Brunswick and P. E. Island—at the end of last year was 4091 vessels, representing an aggregate of 787,723 tons. This shows a decrease of 90 vessels and 40,795 tons. This decrease is larger than that in 1886—76 vessels and 37,703 tons. Up to 1878 the tonnage of the Dominion increased steadily, being then 7469 vessels and 1,333,015 tons. From that time down to 1886 the decline has been steady, the figures for the latter year being 7294 vessels and 1,317,766 tons. This decline is attributed to the comparative dullness of the carrying trade and the increase in the number of iron built ships. An iron ship can now be built as cheaply on the Clyde as a wooden ship can be built in Nova Scotia or New Brunswick, and some Nova Scotia ship-owners who, up to 1878, built their ships in their own shipyards are now having them built on the Clyde.

Arbitration of labor questions in the name of the State has been successfully practiced in Massachusetts during the year, and according to Governor Ames has proven its efficiency as a means of allaying friction and quelling strife between capital and labor.

Mayor Hewitt wrote a reply to a gentleman who heard his remarks on the evils growing out of trade organizations, and who spoke approvingly of the position taken with reference to strikes. The Mayor says it is to be regretted that he did not present the other side of the question. "I have frequently expressed the opinion," says the letter, "that organization is necessary both for employers and employees; that they consult their duties and their interests alike by forming unions. It would be a great misfortune if they were broken up, and in the future I think that strikes and boycotts will cease to exist, because the organizations will, through proper agents, settle or arbitrate their differences without resort to extreme measures. But in the meantime any attempt of the organization either of the employees or employers to interfere with these duties which concern the existence of large communities must be met by resistance and punishment. In the case which you put to me, that of manufacturers who will not pay the current rate of wages, I should recommend resistance on the part of workmen through union, and, if necessary, through other unions of workmen. It is exceedingly desirable that the standard of wages paid to workmen should be as high as possible, and all efforts to raise the rate



of wages without interfering with the rights of individual workmen are to be encouraged by right-minded men."

The Hawaiian cabinet, backed by the Reform League, demand that Judge Huston, an American, shall be offered a position now vacant in the cabinet; also that Sanford Dale, born in the islands of American parents, shall fill the vacancy in the Supreme Court. The king is advised by the English and American ministers to comply with the demand.

Workmen in the building trades in New York complain that many Scotch and English come to this city in the spring and remain only while the active season continues. Some of the trades unions have resolved to exclude these "birds of passage" from their organizations.

The value of free labor in South Carolina, as compared with the old slave system, is shown by a compilation of figures in one of the Charleston papers, in which the products of the farm and factory for the year 1887 foot up \$101,682,000, against a total of \$54,500,000 in the year 1860. While the yield of farm products is about the same the State manufactures have increased 91 per cent. within seven years. There are now in the State over 3000 mills of all sorts, employing more than 34,000 operatives. The number of the latter has more than doubled since 1880, and there has been very nearly an equal growth in capital and output. Since 1880, too, the State has fitted itself out with more than 500 miles of new railroad.

The marine engineers on the lakes have formed an association modeled on the plan of the Brotherhood of Locomotive Engineers and number 150 members. There are fully 3000 engineers employed on the great lakes.

The completion of the Mexican International Railway to Lerdo and Eagle Pass, opens a second all-rail route to the City of Mexico, shortening the distance between the interior of Mexico and New York about 700 miles. The International line is part of the Southern Pacific system, and gives San Antonio direct connection with the city of Mexico. The distance is 1190 miles.

Governor Ames, of Massachusetts, in his address to the Legislature says, in reference to convict labor in that State, that the law abolishing the contract system has not yet been fairly tried. It was passed last year to prevent the competition of convict labor with free labor, but it should be borne in mind, he says, that if the convicts earn nothing toward their support, free labor has ultimately to pay all their expenses, and if the convicts use up material which, after it has been manipulated by them, becomes unsaleable, free labor must pay for that also.

The Chicago dressed beef canning companies petition the Interstate Commission, alleging extortionate transportation charges, and ask for relief. Their claims already amount to \$950,000, and a suit in the United States courts is said to be in contemplation.

On account of cholera in Chili the mails to Chilean ports are now forwarded via Buenos Ayres, unless especially addressed "via England."

The year's statistics of the exports of cotton goods from the United States have been completed, showing that this trade steadily gains in importance. For the year 1887 the total number of packages exported from the various ports was 213,649, as compared with 228,173 in 1886, showing a decline of 24,000 packages and upward for the year, but the valuation was \$11,000,000 for 190,000 packages from New York alone, against \$11,241,800 for 207,285 in 1886, a decrease of 10 per cent., while the difference in packages was 11

per cent. less than for the same time. This apparent decrease in quantity was not due to a lack of demand, but to the fact that home markets outbid exporters. A notable feature of the shipments for 1887 was the direct forwardings to China and British East Indies from this port, to the avoidance of transshipment at Liverpool and London. The shipments to South America and adjacent ports show a fair increase. The direct business to Africa was smaller even than last year.

The fine American ship Alfred D. Snow, Captain Willey, loaded with wheat by the managers of the California wheat deal, was lost off the coast of Ireland with all on board, comprising a crew of 28 men. The cargo was valued at nearly \$100,000.

Mr. Townshend, of Illinois, has in mind a sort of commercial Utopia. He has submitted to the House a bill to promote the establishment of free commercial intercourse among the nations of this continent by the creation of an American zollverein. It professes, among its objects, to seek the increase of the American merchant marine, a common system of weights and measures, a common system of silver coins in all the American countries, a plan of arbitration of all questions, disputes and differences among those countries that now exist or may arise, &c.

An enormous "warehouse trust" is understood to have been formed to control the water front in Brooklyn, with the design of eventually extending the sphere of its operations. The leaders in the movement are Jeremiah P. Robinson and Edward B. Bartlett & Co. Robinson's stores cover an area of nearly two square blocks, between Amity and Warren streets, Brooklyn, while E. B. Bartlett & Co. control a dozen other warehouses and docks. The plan of the trust is first to have general offices, the expense of which will be maintained proportionately by the following firms: Cushman & Co., Nesmith & Sons, Beard & Kempfand, Martin & Fay, Franklin Woodruff & Co., Pierpont & Sons, and several others. The "shore," as it is known by warehousemen, will consist of several districts, running all along the line of Brooklyn's water front, and a responsible man will be employed to look after its interests. Weighing, now done by several firms, carting, cooperage work, gauging and sampling of sugar, will be attended to by it, and the small firms that now do the work, it is surmised, will be forced out. Steam lighters will also be purchased, and the trust will, it is believed, control three-quarters of the business of the port.

The coroner's jury find that the Vacuum Oil Company are responsible for the naphtha explosion in Rochester which destroyed three flouring mills and many of the sewers into which the naphtha escaped from the fractured underground pipes.

The cigar-makers of this city have begun a strike against Mr. Hirsh, president of the manufacturer's association, who not only reduces wages but drops the blue label, alleging that it is offensive to his customers. The Cohoes knit goods manufacturers also refuse to use the label.

There is a boom in real estate in Brooklyn on the line of the elevated railroads projected and in course of construction.

The tackle broke and a ten-ton safe for a jeweler in Maiden Lane fell 50 feet, striking cornerwise and burying itself a foot in the stone flagging.

In Adam Carr & Co.'s brass foundry, in Paterson, last Friday, Joseph Class and Henry Durkin were charging the iron cupola. They stood at the top of the cupola and threw down the metal. The fire was burning below, but the blast had not yet been turned on. A big piece of metal became lodged in the cupola. Class tried so start it one way or the other, but in

vain. He then had the draft cut off so that the cupola would not be so hot, and, with the assistance of Durkin, he lowered himself in the cupola and endeavored to kick the piece of metal loose. Suddenly his voice ceased. Durkin then went down and found the senseless body of Class. With assistance Class's dead body was pulled out. Durkin also may die.

The dilapidated Hall of Records, in City Hall Park, is crammed with documents relating to conveyances of real estate, mortgages, &c., almost every available foot of space being used up, and a fire-proof structure is among the most urgent needs.

The decline in the tea trade with China has prompted action by the New York Chamber of Commerce, who ask the attention of the Government at Washington to the subject in hopes of securing through the United States Minister at Pekin a reduction of the export duty which now hampers the trade.

Governor Hill's message to the Legislature of New York contains a number of important suggestions. He says in reference to the public account system of employment of prison convicts that the law relating thereto should be modified so as to prevent as far as possible competition and interference with outside labor, and the recommendations of the Labor Commission to the last Legislature should, in the opinion of the Governor, be carefully considered. A revision of the tax laws so that the burden of taxation may rest more evenly upon real and personal property is a pressing necessity; also an act further limiting the issue of stocks and bonds. The last of the Governor's recommendation for the inauguration of a system of manual training in schools is eminently practical and worthy of attention.

The Board of Electrical Control in this city have made their first report, showing what has been accomplished by them and their predecessors, the Subway Commissioners. The old board laid about 2 miles of conduit, containing 2500 miles of wire. The present board has seen about 36 miles of trench completed since July, with a capacity for 13,700 miles of telegraph and telephone wires and 500 miles of wire for light and power purposes. The principal companies each have about 500 miles of wire underground, and are preparing to enter the subways at many points. Thus far only 217 poles have been removed from the streets, partly for the reason, as explained, that the Commissioner of Public Works, upon whom the duty devolves in case of default by the companies owning the poles, has no money available for this specific purpose. The board are endeavoring to find remedies for the danger arising from the proximity of electric and power wires to buildings and other obstructions.

The customs duties received at Philadelphia in 1887 were \$17,947,000, an increase of \$1,044,000 compared with the previous year.

Colonel Andrews, engineer of the Tehuantepec Canal Company, proposes to obtain capital in Europe for the prosecution of the work.

The Mayor of Boston, in his address to the City Council at the opening of the year, says the city debt is about \$27,500,000, and the valuation is placed at \$747,625,000. A statement from the custom-house shows the year's receipt to have been \$23,000,000, which is a gain of 5 per cent. over the previous year, and the largest since 1883. Total imports, including gold and silver, were \$53,702,700 in 1885, and \$60,052,269 in 1884. Exports were \$54,524,079 in 1885, and \$65,808,829 in 1884. The fear that the Interstate Commerce act would ruin the foreign trade in Boston hardly seems to have been realized.

# The Iron Age

New York, Thursday, January 12, 1888.

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The fact has been frequently emphasized during the past year that the new railroad mileage built in 1887 was principally constructed by old companies. In other words, there has been practically nothing of the wildcat enterprises which characterized the boom years of 1881 and 1882. It is naturally asked whether railroad construction in the future will be as largely controlled by those who have already large interests, or whether it is possible that there may again be years when the public will be eager to buy bonds, with stock thrown in, whoever may offer them. Have the times passed by when a small set of individuals, by taking the initiative, can put through schemes of doubtful merit or having only a shadowy future? We incline to the belief that the concentration of railroad mileage into great systems managed by men of wide experience, keen foresight and indomitable energy will tend to confine new enterprises to the operations of comparatively few leaders. Railroad managers have learned from bitter experience that it pays to lead in developing new territory rather than be driven to expand by unscrupulous or over-sanguine speculators or promoters. They have been acting on that conviction, and it has to some extent had the effect of making capital timid and critical concerning ventures which come from other quarters. It is naturally inferred that if an established system does not find enough inducement in opening new territory, then the prospects of success for outsiders must be precarious. Projects arising from a desire to share in particularly remunerative traffic, or to force an older road to buy out a new aggressive rival for the sake of peace, have not met with enough success during the past few years to encourage similar ventures. It is probable, therefore, that the work of extending our railroad mileage to meet the requirements of a growing country will become more and more centralized in a few hands, a tendency which cannot help being beneficial to the country at large, so far as it is concerned in cheap construction and a reduction of losses of capital invested.

It would be a very curious condition of affairs indeed if the owners of manufacturing establishments who had, by the most unrelenting efforts, brought their works up to a very high point of efficiency, should be obliged to pay a tax on their energy and skill. The mere statement of such a thing discloses its gross unfairness. Yet this is what has recently been virtually attempted in the case of some important Western manufacturing concerns when they came to make contracts for their supply of an essential material for the year which has just opened. The price of their finished product has been considerably reduced during the past twelvemonth, and they

sought a corresponding reduction in the materials which they are obliged to purchase. It happens, however, that they have distinguished themselves for their exceptionally large production and skillful management, thereby affecting a saving in cost as compared with the results at competing works not managed quite as efficiently, and this fact was brought forward by those who controlled the material for which they wished to make contracts as an argument against the proposed reduction in its price. A seller is, of course, bound to use every effort to keep up the price of his goods, and he would possess a very low grade of commercial sagacity indeed if he did not do so, but there are staple articles which cannot be handled as a grocer would sell mackerel or a shoemaker a pair of shoes, their price being regulated by the condition of the trade in general. The cases to which we refer are of the kind to be settled on the broadest principles. If others in the trade are favored with a lower price, that lower price should certainly be extended to these establishments. If they can manage to effect a slight saving of cost, at compared with their competitors, they are entitled to the whole of the benefit thus accomplished; and it is an absurdity for other parties to expect to get any share in it, which is precisely what the matter in question means. If such an argument against lower prices of materials, which are themselves being produced at a very fair profit, should be permitted to have any weight in negotiations, there would be an end to enterprise, or, what is just as important, there would be an end to the communicativeness which now prevails among American manufacturers as to what they are accomplishing in the line of increased output or economical production.

The Western iron and steel trade has been treated to a genuine surprise by the railroad companies. Some time since notice was given that an advance of 10 per cent. in freight rates would be made on the 2d of January. As this meant quite a neat little addition to cost on large orders laid down in Western cities, the agents of Pittsburgh and Wheeling and Eastern Ohio manufacturers were able to pick up considerably more trade for quick delivery at Chicago and other Western points than they would ordinarily have been able to secure at this season of the year. But on the 5th inst. the announcement of a reduction of 2½ cents per 100 pounds on the old rate was made public. This inures to the benefit of the Western buyer who thought it would be as well to wait a little before placing his order, and will cause a feeling of chagrin on the part of those who put their faith in the professions of the railroad companies and believed that they intended to do what they had announced. It is possible, however, that the railroad companies really intended to make the advance, but that they were obliged to change their plans on account of the new rates which have been adopted on iron and steel between Chicago and New York. According to these new rates carloads will be hauled either way at 25 cents per 100 pounds, and less than carloads at 30 cents, which is a reduction of 2½ cents, and was posted to go into effect on the 9th inst. It may not be out of place to state in this connection that a great deal of dissatisfaction is cropping up in

the West over the matter of freight rates. It is alleged that discrimination between shippers is as frequent now as it was before the passage of the Interstate act. This is said to be done in a number of ways, but the most common method is that of "under billing." A carload of 50,000 pounds will be way-billed at 30,000 pounds, and freight charged according to the smaller weight given. In this way a shipper of nails, bar iron, or steel, on which full rates are paid, will find that a competitor is able to make a slightly lower price and yet claim that he is receiving full factory rate. Investigations are being made, with a view to having the practice stopped.

At the last meeting of the Iron and Steel Institute leading English metallurgists dwelt upon the advantages of the basic process in the manufacture of open-hearth steel. There the expressions of opinion, and inferences were brought about by the claims of constructors who laid much stress upon recent designs of furnaces capable of allowing of rapid repairs of the lining. Still, the quantity of basic open-hearth steel made in England has been relatively small, while in Germany development in that direction has been far more rapid. Herr Kurt Sorge, of Coblenz, an engineer who is well-known to many American iron-masters, in a contribution to *Stahl und Eisen* states that there has been an extraordinary increase in the production of open-hearth steel in Germany, almost exclusively produced on a basic hearth. He claims that for purposes calling for the highest requirements it must be admitted that only basic open-hearth steel can be used. While it is conceded that this method of manufacture cannot compete with the acid or basic converter in the production of great quantities, as for rails and for wire billets, it has a wide field in the consumption of steel for plates, tires, bars, &c. Its great advantages are the possibility of utilizing miscellaneous scrap, without reference to its composition, at least so far as phosphorus is concerned, and the admittedly high quality of the metal which it is capable of turning out from such stock. Small works can use it to produce their own raw material, thus rendering themselves independent of the larger steel works. The principal drawback, however, to its introduction was at first the difficulty of securing a good lining for the hearth, and the necessity of interpolating between it and the acid roof a refractory material neutral to both. English engineers have apparently adopted dolomite as the basic lining, with chrome as the neutral layer seeking relief from frequent repairs by designs of furnaces facilitating the latter. In Germany magnetite seems to be gaining in favor, since it has been recognized that the natural rock must be submitted to the highest temperatures before being used. Then, its shrinkage is small, and, what is a very important advantage, it is not affected by exposure to the atmosphere, so that the prepared material may be transported over long distances and may be stored for a long time. The material is used chiefly in the form of brick. Herr Sorge states that hearths lined with magnetite stand from 500 to 600 charges, and that in only one case their life was below 300 charges. The raw material is obtained in the Veitsch Valley, Styria, the rock containing from 90 to 96 per cent.



of carbonate of magnesia, 0.5 to 2 per cent. of carbonate of lime, 3 to 6 per cent. of carbonate of iron, up to 1 per cent. of silica, and up to 0.5 per cent. of peroxide of manganese. We understand that experiments are about to be made in at least two works west of the Allegheny Mountains with the basic open-hearth process, which would appear to possess special advantages, too, when natural gas is available, so that the fuel cost is reduced to low figures. We are informed that the German magnesia brick and fettling is to be imported into this country in the absence of any known deposits of the raw material here.

#### Mineral and Agricultural Resources of Queensland.

Queensland is one of the most favored Australian colonies, inasmuch as it combines some products of the tropics with those of the temperate zone, and abounds not only in quartz gold, but in tin. Geographically its position is a most enviable one, occupying as it does the whole of the northeastern portion of the continent, comprising 668,497 square miles, or 427,838,080 acres. The country extending along the eastern seaboard is indented with several fine bays and estuaries, which are the outlets of rivers, a number of which are navigable for good sized vessels. A mountain range, called the Main, extends throughout the greater portion of the colony, the Belenden Kerr range reaching an elevation of over 5000 feet above the sea level. The population, excluding the aborigines, was 326,916 at the end of 1886. Brisbane, the capital, has 50,000 inhabitants. European immigration for the year 1885 was 10,736, 2004 being brought to the colony at the expense of the Queensland Government. The arrivals from Hong Kong numbered 673, and from the South Sea Islands 2012. A poll tax of £30 is levied upon every Chinese arriving in the Colony. Land had been granted in fee-simple up to December 31, 1885, to the extent of 7,728,568 acres, for which £5,129,419 had been paid.

Between the Main range and the sea, especially on the banks of rivers, there is a considerable quantity of good alluvial land, which in its natural state is covered with a dense growth of timber. Much of this, in the more settled portions of the country, has been cleared and cultivated, and is found to yield a remunerative return to the farmers, who are usually small proprietors, cultivating the soil principally with their own labor, and growing chiefly sugar, Indian corn, sweet and Irish potatoes, arrowroot, and semi-tropical fruits. Sugar growing is now becoming a very important industry. In 1885 there were 59,186 acres under cane, of which 38,557 acres were crushed, yielding a return of 55,796 tons of sugar, which may be roughly valued at £1,075,235. Of arrowroot there were in 1885 330 acres under crop, yielding 551,912 pounds, worth £8670. The coast waters, bays and rivers abound in excellent fish for the table, while the deep-sea fish resemble in firmness the cod and haddock of northern waters. The oyster banks not only supply the demands of the capital, but form an article of export to the Southern colonies. In 1885 13,299 acres were planted with wheat. Out of the total area planted the produce of 3206 acres was mown for hay, 4819 acres were totally un-

productive, and only 5274 acres were reaped for other grain, yielding 51,598 bushels. The importance of the pastoral interests will be seen by the value of the following exports of the home products connected with this industry for the year 1885: Wool, £1,779,682; hides and skins, £125,603; tallow, £97,706; horses, cattle and sheep, £674,200, and salted and preserved meat, £183,572, together £2,860,763. Mining has proved a great source of wealth to the colony. During the year 1885 the exports of gold and other metals are given as follows: Antimony, £1296; gold, £1,131,184; tin, £156,777; copper, £1286; silver ore, £49,572, and silver lead, £350, together £1,340,465. The Gympie and Charters Towers gold fields still maintain large mining populations, and the yield from their reefs, although satisfactory, is not so favorable as would be the case if more scientific appliances were available for the extraction of the metal. During the year 1884 an important discovery of gold was made near Rockhampton, at a place called Mount Morgan. The find is undoubtedly a very rich one, but, being private and not on Crown land, it is difficult to obtain reliable information as to the actual yield. The geological character of this gold field is peculiar, the gold being found in a frothy, porous sinter, so light that it floats in the water like pumice, and the fine gold is disseminated throughout the sinter, which is supposed to have been deposited by a thermal spring. Another important discovery was made during the year 1880 in tin mining in the Cardwell district, at Herberton. The returns are very good, and a large and apparently permanent township has sprung up in the locality. It is estimated that about £1,200,000 worth of ore has been raised at that place. There are lead mines in operation at Ravenswood, the ore from which yields a good percentage of silver. There are also large deposits of gold in the district. Cinnabar, antimony and manganese are also among the mineral products. Marble of a fine grain is found. Furthermore, excellent coal, 209,698 tons of this mineral being raised during 1885, valued at £87,228. At Burrum a railway has been constructed to bring it to the port of Maryborough. Valuable timber of various descriptions, as well as medicinal and textile plants; furthermore, native fruits worth cultivation are among the products of this remarkable colony. Its development since 1876 is shown by the following figures:

	Population.	Imports.
1876.....	187,100	£3,126,559
1886.....	326,916	6,422,490
	Revenue exclusive of land.	Expenditure.
1876.....	£3,875,581	£1,283,519
1885.....	5,243,404	2,875,609

The public debt on December, 31, 1885, was £19,320,850.

At the end of 1885 the railways in Queensland showed 1434 miles in operation, the revenue being £691,541; 558 miles were in course of construction. There are 250 telegraph stations; the number of miles of line is 7533, with 12,290 miles of wire. The telephone is also much used; aerial cables containing multiple wires are introduced, and at Brisbane there are 536 subscribers. Fine ocean steamship lines maintain the Transpacific and Transatlantic mail service, and communication by steamer with Sydney and Melbourne is

almost daily. There are 447 free schools containing 55,772 children on the roll. The permanent land defense force is 2379 strong; marine defense is provided for by a gun-boat, and by three naval brigades and one artillery corps. There are nine banks, with 114 branches. The value of the coin and bullion is given as £1,404,158; deposits, £7,188,958; note circulation, £661,168. The Government savings bank returns the number of depositors as 36,175, and amount of deposits as £1,340,255.

In a word, Queensland is one of the most completely constituted, best-governed, and most prosperous communities on the face of the earth, and as such has undoubtedly a great future before it. Nor are there any local questions, whether social, economical or political, disturbing harmony among the people. Few countries can say as much.

#### Courts of Conciliation in Iowa.

A movement has been started in Iowa which will be of considerable interest to the residents of other sections of the country if it meets with the approval of the law-making powers. Believing that a large class of minor disputes were capable of settlement without invoking the expensive machinery of the courts of justice, influential citizens of Iowa have framed a law providing for the establishment of a court or commission of conciliation in each county in the State, to determine controversies between individuals and also to harmonize differences between employers and employees. An appeal will be made to the Legislature at the proper time to incorporate the measure among the statutes of the State, and the appeal will be backed by a strong expression of public opinion which is being brought to bear in the various counties.

The scope of the proposed tribunals is thus stated: "Courts of conciliation are not courts of arbitration, but courts that seek to reconcile the parties as well as to determine the matters in controversy and gain their consent to the judgment rendered and thereafter be friends, not enemies, as is so often the case where persons have appealed to courts of coercive justice." In this respect such courts will have a strong resemblance to tribunals which have been in successful operation in Denmark and Norway for half a century. One party can bring the other before the court of conciliation by compulsory process, but unless an agreement can be reached or the disputants be induced to compromise their difference nothing further can be done without appealing to the ordinary courts. If, however, the court of conciliation can persuade the parties to accept its finding, the judgment is conclusive and further litigation is avoided. It is said that in Denmark not more than one-sixth of the controversies arising are finally litigated in the ordinary courts.

With the increase of our population, the rapid multiplication of business interests, and the constant growth of what may be called legitimate business of the courts, there has been in recent years a strong tendency to overtax the facilities for the administration of justice and the settlement of conflicting claims. Petty causes have grown to be a nuisance of vast proportions, taking much valuable time of courts and juries, to the hindrance of more weighty matters, and this is true of both country and city, and of almost

every section. In every jurisdiction the number of judges is constantly being increased, to keep pace with the growth in population and business, but the facilities for deciding disputes seem destined to be forever outgrown. Slow as the course of justice proverbially is, it becomes slower every year, and the great underlying cause is the vast number of petty law suits, to settle which the entire machinery of the courts must be put in operation. Some method should be devised by which these matters could be regulated better, so that important questions would stand a little chance of decision in the decade in which they originate. Yet the rights of suitors should not be impaired. No matter how insignificant a case may appear to be, it may be of much importance to the individual interested. His rights should not be sacrificed. If, through some such scheme as is proposed in Iowa, minor cases can be settled outside of the regular courts of justice, much would be accomplished in the way of relieving overcrowded courts of an onerous pressure and impatient business men of vexatious delays.

As to the settlement of disputes by means of such courts between employers and employees the plan proposed will hardly be successful, as similar measures have not succeeded in other States. Courts of conciliation for the settlement of labor disputes have been authorized by various State Legislatures, in the hope that with a legally warranted tribunal both parties would feel willing to intrust the settlement of their dispute to other persons than themselves. But it generally happens, and too generally for the credit of this method of settling labor disputes, that when one party is willing to submit the controversy to the tribunal for its decision the other party is decidedly unwilling, and there being no compulsion possible the matter rests there. The act is hardly a dead letter on the statute books of the States which have adopted it, but very few cases come under its cognizance. It is unfortunate that no good measure can be devised by our law-makers for the settlement of labor disputes, but nothing will be really effective unless it is made compulsory on both parties to the controversy on application of one of them, but this would be coercive in the highest degree, an interference with private rights, subversive of all independent action and possibly conducive to rank injustice in many localities.

#### Condition of the Blast Furnaces, January 1, 1888.

Our reports show that there has been a further falling off in the furnace capacity at work during December, and that so far as anthracite pig is concerned we enter 1888 with less current make than we were producing in the beginning of 1887. In coke iron it is somewhat different, and yet it should be emphasized that a large part of the falling off from December 1, 1887, is due to a revision of the furnace capacity of the Pittsburgh district. We present also, elsewhere, an estimate of the product in 1887, based upon figures collected primarily to obtain the basis of a close computation of the productive capacity of the different furnaces of the country. We have found that for obvious reasons it is

not safe to base figures of capacity upon any other data than actual make over long periods, making allowance for fluctuations in the current make above or below usual figures due to temporary causes. The tendency is to overestimate capacity, which robs returns of much of their value, since few have the data and the patience to introduce the necessary factors of safety. Our aim has been to furnish figures which will allow of a very close computation of what is being actually done, not what the plants can possibly do with the aid of unusual coincidence of favorable circumstances.

The following is the status of the anthracite furnaces on the first of the year:

*Anthracite Furnaces in Blast, January 1.*

Location of furnaces.	Total number of stacks.	Number of furnaces in blast.	Capacity per week.	Number of furnaces out of blast.	Capacity per week.
New York.....	29	13	3,562	16	4,550
New Jersey.....	15	5	1,755	10	3,185
Spiegel.....	8	3	309	5	0
Pennsylvania:					
Lehigh Valley.....	48	37	11,615	11	2,227
Spiegel.....	1	0	0	1	40
Schuylkill Valley.....	41	22	7,088	19	3,314
L. Susquehanna Val.....	24	15	4,922	9	1,973
Lebanon Valley.....	15	13	6,172	2	890
U. Susquehanna Val.....	18	9	2,617	9	1,625
Maryland.....	4	1	252	3	550
Total.....	198	118	98,206	80	18,830

	Furnaces in blast.	Capacity per week.
January 1, 1888.....	118	38,206
December 1.....	122	39,487
November 1.....	124	40,028
October 1.....	123	39,440
September 1.....	125	38,338
August 1.....	129	37,930
July 1.....	138	40,742
June 1.....	138	44,188
May 1.....	137	43,802
April 1.....	139	43,585
March 1.....	141	43,724
February 1.....	137	41,951
January 1, 1887.....	139	40,733
December 1.....	119	36,820
November 1.....	116	36,348
October 1.....	114	35,819
September 1.....	112	33,207
August 1.....	120	36,841
July 1.....	117	36,762
June 1.....	121	38,239
May 1.....	119	36,924

In New York a number of minor changes have taken place. One of the Falkill furnaces is out, while one of the Elmira stacks has gone in. In New Jersey only five furnaces are running, besides those stacks producing spiegeleisen from residuum. As will be noted from the records of production given below, the make of the State during the second half of the year has been under the average. From the Schuylkill district there was little that was new in the beginning of the month. Some furnaces have, however, begun to bank as the result of the coal strike, and others may soon follow. It is worthy of note that the district entered the year with furnaces in active operation, whose aggregate capacity was 7088 gross tons, of which 2850 tons weekly is directly tributary to rolling mills owning the furnaces. In the Lehigh Valley the majority of the furnaces continue to struggle along. One of the furnaces of the Allentown Iron Works was blown out during December and only 10 of the 12 stacks of the Thomas Iron Company were running. Glendon was making iron with four out of five stacks, while Bethlehem and Crane had their entire plants in active operation. Still the returns of the different works generally show a slight decrease in December product as compared with the average. We may state that concerns representing 36

furnaces made only 283,562 tons during the second half of 1887, as compared with 303,904 tons for the same plants during the first six months of the year, figures which may be taken as fairly indicating the effect of the scarcity of the usual fuel as the result of the prolonged strike in the Lehigh mines. In the Lower Susquehanna district one of the two Paxton furnaces went out on the 18th ult. for want of sufficient hot blast capacity, the furnace to resume in about six weeks. The Pennsylvania Steel Company now has two furnaces out of five idle, and Conewago is about to blow out. In the Lebanon Valley both Cornwall furnaces are now producing. In the Upper Susquehanna Valley there are no changes to note. We give below an estimate of the product of anthracite pig iron in 1887. The status of the coke furnaces was as follows:

*Bituminous and Coke Furnaces in Blast  
January 1.*

Location of furnaces.	Total number of stacks.	Number in blast.	Capacity per week.	Number out of blast.	Capacity per week.
New York.....	3	2	2,660	1	1,800
Pennsylvania:					
Pittsburgh district.....	19	16	14,582	3	4,575
Spiegel.....	1	1	663	0	0
Shenango Valley.....	19	14	8,350	5	2,792
Junata & Conem.....	22	14	6,315	8	1,426
Spiegel.....	1	1	197	0	0
Youghl. Valley.....	5	3	1,077	2	776
Miscellaneous.....	1	1	485	0	0
Maryland.....	11	7	3,965	4	1,885
Virginia.....	6	3	1,711	3	950
West Virginia.....	4	2	650	2	560
Kentucky.....					
Ohio:					
Mahoning Valley.....	14	10	6,727	4	2,980
Hocking Valley.....	15	7	1,925	8	1,470
Hanging Rock.....	14	10	1,669	4	835
Miscellaneous.....	17	13	8,656	4	1,740
Illinois.....	16	12	12,211	4	1,790
Missouri.....	8	8	2,107	0	1,920
Wisconsin.....	3	2	1,037	1	680
Indiana.....	2	2	355	0	0
Michigan.....	1	0	0	1	290
Alabama.....	12	9	3,478	3	1,581
Tennessee.....	9	8	3,769	1	350
Georgia.....	2	2	812	0	0
Colorado.....	1	1	490	0	0
Total.....	308	143	88,101	66	28,219

	No. of furnaces.	Capacity per week.
January 1, 1888.....	149	89,101
December 1, 1887.....	144	88,835
November 1.....	151	90,459
October 1.....	152	89,123
September 1.....	145	83,194
August 1.....	113	62,091
July 1.....	98	47,819
June 1.....	98	44,865
May 1.....	148	88,509
April 1.....	148	81,736
March 1.....	146	79,682
February 1.....	145	79,257
January 1, 1887.....	137	73,422
December 1, 1886.....	139	73,795
November 1.....	140	73,013
October 1.....	136	70,802
September 1.....	133	69,206
August 1.....	134	68,852
July 1.....	132	71,316
June 1.....	129	70,766
May 1.....	129	67,888

In the Pittsburgh district the principal event during December has been the blowing out of furnace D of the Edgar Thomson plant, and the banking of furnaces C and E. In spite of the coke strike, by which practically the month of July was lost to most of the furnaces, the works of the Pittsburgh district are able to show the phenomenal total of a production in six months of not less than 461,400 gross tons, including spiegel, certainly a remarkable total for 20 furnaces, of which a few besides are relatively small. It is safe to state that if the coke strike in the summer had not intervened they would have shown a record of close to 525,000 gross tons. On the basis of the returns received we have somewhat modified the conventional estimates of capacity which we had retained



for the Pittsburgh district alone. This fact, we may add, is accountable for over 1700 tons of the decrease in capacity shown in the general total.

In the Shenango Valley one of the Douglas furnaces has been again blowing for the greater part of December. Fannie, however, has gone out for repairs, and Keel Ridge has banked, and Sharon is reported out. In the Youghiogheny Valley Charlotte has banked, owing to differences about wages with the men, and Dunbar is similarly threatened. Fayette is running smoothly and will continue unless prices reach an unremunerative figure. In the Juniata and Conemaugh valleys there has been no change. In West Virginia Top Mill Furnace banked on the 25th ult. In the Hanging Rock region, Ohio, Belfont went out on the 1st for a short period of repairs, while in the Hocking Valley the new New York Furnace has just been blown in. It is 65 x 15, with two 55 x 18 Gordon-Whitwell stoves. In the Mahoning Valley Grace and Haselton were still out for repairs; the latter has since resumed. From Wisconsin, Indiana, Missouri and Illinois comes no news of importance. In the South one of the Woodward furnaces was banked on the 1st inst. for want of coke. It was, however, expected to resume at an early date. Reports of the blowing in of one of the Sheffield furnaces are not as yet confirmed, although it is probably making iron now. In Tennessee the Chattanooga Furnace has gone out for relining, which will be completed by February 1. The second furnace of the Colorado Coal and Iron Company, at Pueblo, will be ready to blow in about March 1.

The status of the charcoal furnaces was as follows:

Charcoal Furnaces in Blast, January 1.

Location of furnaces.	Total number of furnaces.	Number in blast.	Capacity per week.	Number out of blast.	Capacity per week.
New England.....	14	8	635	6	446
New York.....	10	4	727	6	493
Pennsylvania.....	23	6	593	17	615
Maryland.....	13	2	182	11	750
Virginia.....	24	5	243	19	810
West Virginia.....	3	0	0	3	163
Ohio.....	18	5	515	13	940
Kentucky.....	12	0	0	12	211
North Carolina.....	12	1	92	1	81
Tennessee.....	9	5	931	4	303
Georgia.....	2	0	0	2	114
Alabama.....	9	0	1,430	9	653
Michigan.....	25	15	4,174	10	1,636
Minnesota.....	1	0	0	1	220
Missouri.....	4	2	576	2	440
Wisconsin.....	11	4	864	7	955
Texas.....	2	1	178	1	100
California.....	1	0	0	1	245
Washington Ter'y.....	1	1	175	0	0
Oregon.....	1	0	0	1	100
Total.....	175	85	11,310	110	9,165

In New England and New York there are no changes to record. Richmond will probably start another furnace soon. In Pennsylvania Eagle, Greenwood, Hecla, Isabella, Mont Alto and Pine Grove are producing, while in Maryland one of the Stickney and one of the Maryland furnaces are running. The former, however, will blow out its furnace on about the 1st of February, on account of lack of charcoal, and the latter two will go out next month, to be idle for about five weeks. In Virginia Cedar Run is out of blast, leaving only Beverly, Fosters Falls, Reed Island, Speedwell and Walton at work. Walton will continue in blast during the greater

part of this month, and will then stop to put in a new hearth. On the other hand, White Rock is expected to make a blast of about 1000 tons as early in the season as charcoal can be obtained. Ivanhoe is repairing. In Kentucky Hunewell went out on the 22d ult. In Ohio Bloom was forced into idleness through the destruction by fire of the engine-house and bridge-loft. It will be ready to run on the 1st of March. Madison was out on account of scarcity of water, but is probably at work again at this writing. Jefferson will be idle until about June. In Michigan the new Antrim furnace is completed, and will soon begin making iron. The company expects to keep one of its two stacks in reserve. Gogebic is running light on account of shortage in the charcoal supply. Midland and Sligo, in Missouri, continue to make Bessemer Iron for the Western Steel Company. In the South Shelby entered the month with only one furnace at work; the other, which was undergoing repairs, has since resumed. One of the Woodstock furnaces will go out this month to put in a new hearth.

#### The Production of Pig Iron in 1887.

From a very full report of product we are enabled to place before the trade the following estimate of the output of Pig Iron in 1887, the unit being throughout the gross ton. In a large number of cases our figures for the different States and districts are the aggregates of official reports from every producer. We may state that in some cases our grouping of the furnaces is not exactly the same as that of the American Iron and Steel Association.

Turning first to the anthracite we have the following figures:

Production of Anthracite Pig Iron, Gross Tons.

	First half 1887.	Second half 1887.	Total 1887.	Total 1886.
New York.....	103,800	87,623	191,423	195,740
New Jersey.....	93,408	52,926	146,334	140,970
Pennsylvania.....	334,070	323,879	657,947	594,590
Lehigh Valley Schuylkill	231,490	176,921	408,411	351,379
Upper Susquehanna.....	80,010	67,071	147,081	141,178
Lower Susquehanna Lebanon Valley.....	221,583	150,447	372,030	440,502
Maryland.....	7,355	9,138	16,493	10,272
Total.....	1,072,716	1,004,835	2,077,551	1,874,640

On the whole, therefore, the make of anthracite pig during the second half of 1887 has fallen off a little.

Our estimate of the production of pig iron made with bituminous coal and coke as a fuel is as follows:

Production of Bituminous Coal and Coke Pig.

	First half 1887.	Second half 1887.	Total 1887.	Total 1886.
New York.....	6,562	40,306	46,868	.....
Pennsylvania: Pittsburgh district.....	333,620	461,400	795,020	657,122
Shenando Valley.....	157,952	218,705	376,657	347,079
Juniata and Conemaugh.....	199,757	143,816	343,573	392,627
Miscellaneous.....	54,447	.....	54,447	.....
Total Pennsylvania.....	691,329	873,425	1,564,754	1,406,828
Maryland.....	2,232	2,000	4,232	9,533
Virginia.....	70,926	76,583	147,509	134,090
Georgia.....	21,441	15,146	36,587	41,059
Alabama.....	83,779	99,750	183,529	180,133
West Virginia.....	29,071	46,759	75,830	88,052
Kentucky.....	21,623	13,309	34,932	43,286
Tennessee.....	90,958	87,852	178,810	153,361
Ohio:				
Hanging Rock.....	57,723	54,420	112,143	103,927
Mahoning Valley.....	150,744	179,309	330,053	312,650

Hocking Valley.....	39,979	21,030	52,009	51,667
Central and Northern.....	164,856	188,129	352,976	328,116
Total Ohio.....	404,342	419,949	824,271	796,399
Indiana.....	7,776	5,801	13,577	14,875
Illinois.....	24,257	304,019	328,274	448,031
Michigan.....	37,844	37,591	75,435	33,434
Wisconsin.....	39,079	47,190	86,269	48,523
Missouri.....	11,733	8,947	20,680	9,823
Colorado.....	.....	.....	.....	.....
Total.....	743,679	2,106,475	3,850,433	3,338,369

New York stepped into the ranks during the second half of 1887 with the large product of the two Troy furnaces, which have run during the greater part of the time under review. Pittsburgh shows a magnificent total, and the Shenango, Juniata and Conemaugh Valleys, too, have gained in spite of the loss of practically the whole of July, through the coke strike. In Ohio and Illinois similar causes affected product. In the Hanging Rock region the banking of one of the largest furnaces in the district curtailed the product, and in the Hocking Valley scarcity of water affected output unfavorably. The Mahoning Valley and the furnaces in the northern and central part of the State exhibit a handsome increase. Illinois, considering the relatively small number of active furnaces, 12, for the greater part of the time, shows the great achievement of over 300,000 in about five months. All the Southern States with the exception of Kentucky and Tennessee enter into the total with larger figures during the second six months of 1887, while in the West Missouri has a large record.

Turning to charcoal we have the following estimate, which is less complete through the absence of figures from some districts:

	First half 1887.	Second half 1887.	Total 1887.
New England.....	17,882	14,828	32,710
New York.....	12,858	10,814	23,672
Pennsylvania.....	3,665	7,308	10,973
Maryland.....	5,704	7,637	13,341
Virginia.....	2,984	7,150	10,134
North Carolina.....	1,230	1,200	2,430
Alabama.....	42,942	38,743	81,685
Texas.....	1,719	2,626	4,345
Kentucky.....	622	4,690	5,312
Tennessee.....	15,904	22,317	38,221
Ohio.....	5,157	11,496	16,653
Michigan.....	85,219	102,948	188,167
Wisconsin.....	19,993	21,862	41,855
Missouri.....	9,597	15,971	25,568
Washington Ter.....	1,416	1,500	2,916
Total.....	245,354	271,920	506,374

On the whole there has, therefore, been a substantial increase in the make of charcoal iron.

The total estimated make of pig iron in the United States in 1887 is as follows, in gross tons:

	First Half 1887.	Second Half 1887.	Total 1887.
Anthracite.....	1,072,716	1,004,835	2,077,551
Coke.....	1,743,670	2,106,475	3,850,433
Charcoal.....	235,354	271,920	506,374
Total.....	3,051,740	3,383,230	6,434,970

This is by far the heaviest product ever made in the United States, the total for 1886 having been 5,684,542 gross tons.

The cartridge shells for the pneumatic dynamite guns which we noticed a week or two ago as being drawn by Messrs. Brown Bros., of Waterbury, Conn., were made from castings furnished by the Deoxidized Metal Company, of Bridgeport. This company write us that they are now turning out an additional number.

John McLauchlan, manager of the Chicago office of the Andrews Bros. Company, has issued a circular announcing the blowing in of their Haselton Furnace, at Haselton, Ohio, which has just been completely overhauled and extensively improved, and is estimated to have a daily capacity of 150 tons. This will make the eighteenth year in which the Haselton Furnace has made a specialty of Haselton-Scotch metal.

## Annual Review of the Metal Market for 1887.

(Concluded from page 28, Jan. 5.)

### TIN.

So far as the importing and trading interest was concerned, the year was ushered in under most favorable circumstances by reason of the reduced visible supply in Europe and America of only 11,763 tons on January 1, against 15,335 the previous year and 14,293 on January 1, 1885. The decrease was chiefly due to the greater consumption during the previous year in this country, there having been absorbed for actual use over 13,000 tons, the net import in 1886 into the United States having been no less than 13,116 tons, as compared with 10,479 in 1885. It was thought by people familiar with the subject that during 1887 *bona fide* consumption would, at about the range of January prices, take from 1500 to 2000 tons over and above the 1886 figure. It was, moreover, shown that the consumption of the world had outrun production as follows the last five years:

	Production. Tons.	Consumption. Tons.
1877 to 1881.....	185,607	188,144
1882 to 1886.....	216,464	223,025
Totals.....	402,071	411,169
Increase of consumption.....		9,098

On January 1, 1887, the reserves, excluding unsold Banca, had fallen to 11,679 tons, against 13,430 on January 1, 1886. The price of Straits on January 1, was £99. 10/, against £93 the previous year; Banca in Holland stood 60 guilders, against 57. Our own market opened at 21½¢, and closed at 22½¢, while London improved to £101. 17/6. The net import into the United States during the first 11 months of 1886 was shown to have been 11,605 tons, against 9431 in 1885; increase 2174 tons, being at the rate of 190 tons per month.

During February both our own and the London market remained steady, closing at the same figures. Opening at 22.45¢, the New York market closed in March at 22.40¢, while London wound up again at £101. 17/6, no particular features developing in either market. The exports of Tin from the Straits to the United States in 1886 proved to have been 82,015 piculs, against 43,989 in 1885; in January they were 9167, against 5045. Import into this country the first seven months of the fiscal year 17,799,410 lb, against 16,898,276 the previous year; re-export 27,728, against 11,741. On March 1 the visible supply in Europe and America was 11,615 tons, against 13,566 in 1886.

April was speculatively a livelier month on both sides of the Atlantic. The French syndicate alluded to in our review of Copper began its operations in London, and the struggle between contending interests caused wider fluctuations over there. It was given out that production in the East was on the increase quite perceptibly. Opening at 22.40¢, we closed the month at 22.45¢, while London gave way to £101. Import into the United States during the first eight months of the fiscal year, 21,039,069 lb, against 18,533,811 in 1886; re-export, 27,841, against 18,148. Shipments from the Straits this way during the first two months, 12,866 tons, against 14,714 the previous year.

On May 1 the visible supply in Europe and America stood 11,210 tons, against 13,047 the previous year. A tolerable amount of activity and speculation was noticeable both in London and here, the tendency on this side being upward owing to the exhaustion of available supplies. London opened the month at £103. 12/6, and

closed at £101. 7/6, while in this market we improved from 22.45¢ to 23.30¢. The net import into the United States during the first nine months of the fiscal year proved to have been 10,919 tons, against 9414 in 1886. The Banca sale in Holland averaged 62.75 guilders, equal to 23½¢ in New York.

The visible supply in Europe and America on June 1 was shown to be 10,749 tons, against 12,548 in 1886. On June 29, at the Billiton auction, 15,000 piculs were put up for sale instead of the usual 11,000, production having increased at that point. While a fair amount of Tin changed hands in London, a great effort was being made there to depress the market, but in spite of it the closing figure was slightly better, £102. 15/. Here we on the contrary closed a little lower, at 23.10¢. Net import in this country during the first 10 months of the fiscal year, 11,630 tons, against 10,972 in 1886. Exports from the Straits this way during the first four months, 28,004 piculs, against 21,861 in 1886. The average Billiton production during the 10 years ended April 30, 1887, had been 75,800 piculs; the last year it was 89,192 piculs, against 81,052 the previous twelvemonth. The Harvey Peak Tin Mining Company's prospectus, of Dakota, was, on the other hand, withdrawn from the London market during the month.

In July the operations of the syndicate alluded to in the London market began to be felt, and a hardening tendency developed in that market, carrying the price to £105. 2/6, while here a gradual improvement took place to 23.60¢ from actual scarcity. Net import into the United States during the first 11 months of the fiscal year, 12,708 tons, against 11,574 in 1886. Shipments from the Straits this way, 32,139 piculs, against 26,067.

On August 1 the visible supply in Europe and America proved to be 10,521 tons, against 12,143 in 1886. The consumptive demand at this point was so active during the month that lots arriving were all readily taken on landing. In London, on the other hand, a vigorous bear attack unsettled the market. Opening at £104. 12/6, it closed at £102. 15/, while here we wound up at 23½¢. Net import into the United States the last fiscal year, 13,180 tons, against 12,422 in 1886.

September was a month of considerable activity on both sides of the Atlantic, a great deal of buying being done for Continental account in London, consumption, it was stated, having increased very much during the year in that quarter. The market at New York nevertheless was barely sustained, winding up the month at 23½¢, whereas London rose £2. 15/, from £102. 15/ to £105. 10/. The Billiton sale, August 31, averaged 61.75 guilders the picul. The visible supply on September 1 in Europe and America was 11,573 tons, against 11,690 September 1, 1886. Shipments from the Straits to the United States during the first seven months, 46,858 piculs against 40,706 in 1886; from January 1 to September 15, 3750 tons this way, against 3460; to England, 9200, against 8560.

On October 1 the visible supply in Europe and America was 11,871 tons, against 11,606 in 1886, and 15,025 in 1885. October saw a notable advance amid great excitement, both on this side and in Europe, the changed state of affairs being fully realized. London rose to £126 and our own market to 30½¢. Net import into the United States during the first eight months, 19,460,306 pounds, against 18,622,540 in 1886.

The ball thus put in motion carried everything before it during November, during which month London ran up to £163. The Banca sale in Holland came off toward the close of the month at 98.87½ guilders, the price on October 31 having been 71.50.

In our own market Tin advanced during the month from 30½¢ to 34½¢. The shipments from the Straits this way during the first eight months were 59,481 piculs, against 32,817 in 1886.

The visible supply in Europe and America was increased to 13,053 on December 1, as compared with 11,643 on December 1, 1886. After the extraordinary advance in November a good many people in the trade expected the market to sag, but it did not, at least not in London, where, on the contrary, it wound up the month and year at £167, after having during a week or two stood stereotyped at £166. At any rate the excitement of preceding months had spent itself. Here spot Straits terminated the month at 36½¢, at which the representative of the syndicate declared his willingness to supply consumers. A circumstance not to be overlooked is the shipping back of Tin by the Chinese to Singapore while the extravagant prices rule. If we are correctly informed, the principal use to which the Celestials turn the metal is to cast it into domestic idols, but the Chinese are an eminently practical people, whose piety does not, it would seem, resist the temptation of parting with their household gods at a certain price. Should the price remain high some time longer, and the syndicate not sell out soon, it may yet be swamped by an unexpected influx of some such kind, if not by curtailed consumption on all hands.

### Export of Tin from Holland.

		Twelve months—	
		1886.	1885.
To Germany.....	Tons	5305	5047
England.....		187	480
Belgium.....		1059	882
France.....		304	467
Hamburg.....		519	538
The United States.....		473	916
Other countries.....		636	576
Total.....		8483	8886
		Nine months—	
		1887.	1886.
To Germany.....	Tons	4100	4011
England.....		135	150
Belgium.....		732	737
France.....		295	235
Hamburg.....		448	402
The United States.....		304	360
Other countries.....		619	477
Total.....		6733	6372

### LEAD.

Common Domestic opened the year at 4½¢, while in London the quotation was £12. 12/6 for Soft Spanish. Gradually the demand improved in January, and, as the position in Europe was also looked upon as exceptionally sound, the price rose to 4.45¢, closing the month at 4.30¢, Soft Spanish rising to £12. 17/6. Mr. C. Kirchhoff, Jr., agent of the United States Geological Survey, showed the production in 1886 to have been, in tons of 2000 lb, 135,629 tons, against 129,412 in 1885 and 139,897 in 1884. Spanish exportation of Pig Lead proved to have been 104,471 tons in 1886, against 117,640 in 1885 and 118,266 in 1884. Germany produced in 1886 92,520 tons, against 93,134 tons in 1885.

In February, during the war excitement, Lead at first improved 2/6 in London, but finally closed lower, at £12. 12/6. Here the metal continued gaining in favor, and the sales reached some 2100 tons, while in January they had not exceeded 800; the price at New York was \$4.45 at the close of the month.

A fair amount of activity was kept up in our market in March, but prices were barely sustained, closing at 4½¢, while London kept steady at £12. 10/. The total sales for the month in this city did not exceed 1000 tons.

In April there was considerable disappointment about the spring trade, and Lead in consequence was inactive and weak. It commenced the month at 4½¢ and wound up at 4½¢, the sales not exceeding 500 tons all told. London gave way to £12. 7/6.



During *May* the chief local speculator took the metal in hand at New York, and in the western centers of distribution considerable dealings also took place, causing the price to appreciate here to 4½¢, sales for the month aggregating some 4000 tons. In London the market had reached to £12 in the meantime, but terminated the month at £12. 2/6.

*June*, though at first still well upheld, developed a softening tendency as the month proceeded, closing at 4½¢, some foreign corroding bringing 4½¢. The sales summed up some 2000 tons. London remained unaltered.

In *July* the chief operator was again at work; what was done was pretty much restricted to his dealings, consumers being stocked for the moment. Opening at 4½¢, the market closed at 4.70¢, while London, after some fluctuations wound up at £12. 2/6. Sales, 1500 tons.

*August* was a dull month in this vicinity, our market ruling at 4.60¢, while out West actual scarcity caused the price to be higher than here for some days. In London there was a recoil to £11. 17/6. Private advices were received from the Continent of a favorable nature, stocks being light, with prospects of a good fall trade. Sales in New York 500 tons.

In *September* it was found that the fall trade on this side did not come up to expectations—that, consequently, the main holder, supposed still to be the owner of some 4000 tons, would be compelled to rid himself of his stock. At the same time, at the decline in Europe, there was a possibility of a resumption of importations unless we gave way. Opening at 4.65¢, our market rapidly declined to 4.25¢, some 1700 tons being taken. London remained unaltered during the interval.

During *October* the selling at a low price continued, and some 1500 tons again went into consumers' hands at 4.25¢ @ 4.30¢. London meanwhile recommenced looking up and advanced to £12. 2/6.

The sales at a depressed value continued in this market, some 2800 tons being placed during *November*, while in Europe prices began to harden, a recovery to £12. 12/6. Our own market varied little from the October quotations till the last week, when 4½¢ @ 4½¢ was paid.

At length, at the eleventh hour, Lead was caught up by the general metal "boom" in *December*, and changed face entirely; not on its own merits, certainly, but because the general tendency chanced to be in that direction, and speculators chose to deal in it more extensively on the Metal Exchange, where an active trading in it was initiated, which coincided with dealings in the open market during the first week to the extent of 3000 tons, at between 4.45¢ and 5¢. The last week of the month some 200 tons were taken by consumers at 5.05¢, while the speculative element dropped the metal for the time being, January delivery closing at 5.02½¢, March having been paid on 'change while the flurry lasted as high as 5.17½¢. London had risen during the month to £15. 15/.

#### SPELTER.

Common Domestic Spelter opened in *January* at 4½¢, and Silesian at 4½¢; the latter in London at £14. 5/, the month closing at 4½¢ and 4.90¢ respectively, under a better demand for galvanizing purposes. On the Continent the syndicate was getting completed by the Belgian makers joining the same. In *February* both our and the London market remained quiet and steady; in *March* the latter gave way to £14. 2/6. Mr. C. Kirchhoff, Jr., agent of the United States Geological Survey, showed domestic production in 1886 to have been, in tons of 2000 pounds, 42,641 tons, against 40,688 in 1885 and 38,544 in 1884, the world's production having been, reduced to gross tons, 292,662 tons, against 292,561 in 1885, and the average price of Silesian in

London £14. 5/ in 1886, against £14 in 1885. German production had been 130,854 tons, against 129,098 in 1885.

While in *April* and *May* there was no change in our market, except perhaps a better demand for galvanizing Barb Wire. London gave way to £14 in *April*, to recover to £14. 2/6 in *May*. In *June* and *July* a slightly better feeling prevailed in this market, without leading to any improvement, while in London a rise took place to £14. 12/6, and in *August* and *September* our own market kept steady and fairly active. London rose to £15. 10/, and Silesian was quoted here \$4.95 @ \$5. In *October* and *November* the London market continued rising rapidly, closing at £17. 12/6, our own market improving in sympathy to 5½¢. *December* saw a still more important advance in London to £21, while Common Domestic rose in New York to 5½¢, and Silesian could not be laid down here for less than 6½/.

#### Official Trial of the Nordenfeldt Submarine Vessel.

According to reports in English papers the first approach to any official trial of the Nordenfeldt submarine vessel took place on Monday, December 19. It was not by any means a formal official trial, but the boat has been matured to a sufficient extent to exhibit its powers and capabilities, allowance being made for want of practice. As our readers generally are aware, the object of this boat is to approach a ship under water, so as to escape observation, and thus discharge a torpedo in such a way as to strike an enemy with certainty, and in a vital place. In her ordinary mode of progression the vessel lies very low in the water, and is much less visible than a service torpedo-boat. She would approach an enemy thus till she reached a distance at which she might run in danger of being perceived, perhaps from 700 to 500 yards; then she would close all escape for smoke and all passage for air, and sink so low that nothing remains above water but two small glass domes fixed at the top of two cupolas. These domes are sufficiently large to contain a man's head, one in the fore part of the ship and one aft. In this position the vessel would depend on her store of steam provided for as hereafter described, and her crew on her imprisoned air. The captain takes his stand with his head in the forward dome, a position which, it is said, gives him a singularly clear view along the surface of the water at night for such distances as are not affected by limit of horizon. Close to his hand are the handles or levers for regulating the speed and the direction of the boat, also the working of the horizontal propellers employed for descending below the surface. For rising again no propeller is necessary, the system being to adjust the boat to float with the surface of a wooden deck—which has recently been added as a superstructure—nearly level with the surface of the water. As the boat eventually nears her enemy, she descends entirely under the water, so that nothing is visible except the eddies on the surface formed by the revolution of the horizontal propellers, and these would probably be seen only in smooth water. This boat, the Nordenfeldt, is intended to carry four, possibly five, torpedoes. Obviously the discharge of these will need skill and practice in a system so nicely adjusted. Nothing has been as yet carried out in this direction. The trial with which we now deal related exclusively to the working of the boat and to the handling of it, in submerging it, or in bringing it to the surface.

Two trials took place. The first consisted in running the vessel at a fair speed when in the highest position, that is, with the flat deck or superstructure a few inches above the surface of the water, in

which condition the displacement is 160 tons; when submerged it is 230 tons. The object was to enable those who witnessed the trial to judge how far the boat was visible and how far vulnerable in comparison with a service torpedo-boat. The superstructure is, of course, not of any vital importance. Beneath it the boat is protected by a turtle back of steel 1 inch thick, and the conning towers or cupolas by 1 inch of steel. It is intended in future vessels to increase this to 3 inches. The boat thus running at high speed obviously offered a very small mark to artillery.

The boat acquitting herself well in this trial, as well as in descending below the surface and rising again, the tender, with the officials on board, moved off toward Southampton to wait for the Nordenfeldt to attempt an approach after dark. It may be observed that there were several difficulties to be grappled with in this task—first, the tender carried only one indifferent light, and it was a good test of the finding powers of the Nordenfeldt in its various conditions to discover and approach her; secondly, vessels were frequently passing which called for care and prudent handling of the Nordenfeldt to avoid danger of collision. Thirdly, the difficulties of manipulating the boat were for the moment increased by the recent addition of the superstructure, which altered all the levels and adjustments, which experience had taught best suited the boat in its different movements. The result of this condition of things was that considerable delay was experienced in the operations, and the spectators on the tender had a long wait of about four hours before the actual attack was achieved. The night was a very fair one for the purpose. There was a moon, but a considerable quantity of cloud. The water was calm and the night free from mist. The Nordenfeldt approached, sinking in the water as she neared the tender, eventually traveling submerged wholly for about 100 yards, and was not perceived until she had sounded a whistle from a position 70 yards on the port bow of the tender. The Nordenfeldt's rate of speed was about 3½ or 4 knots. She moved about 600 yards off toward a steamer that had just come in from the Cape, when she again sounded a whistle.

Altogether the trials were most successful, but there remains much to be done before the Nordenfeldt can be brought into condition for actual service. The introduction and successful discharge of the torpedoes have to be mastered. Then great experience is needed for handling the boat below the water. Not only has the speed been hitherto kept very low, but also every change in position has been slowly and carefully effected. With a cigar-shaped boat experience has shown that there is a great liability to plunge head down, which is very dangerous in water of limited depth. But the crew of a craft engaged in naval warfare has always to run risks, and the crew of the Nordenfeldt would be very much safer than the men in an ordinary torpedo-boat.

From present indications the Amalgamated Associations' Steel Workers' wages scale, which has been under discussion by the manufacturers at Pittsburgh and vicinity, will be adopted without any serious trouble. After a number of consultations had by the Linden Steel Company, Limited, of that city, and the representatives of the Amalgamated Association, the scale has been signed by the above company, and it is expected that Jones & Laughlins, Limited, will sign it during the present week. It is thought that the action of the Linden company in signing will have great influence with the other firms who operate under this scale, and that it is but a question of a few days when the balance of the firms to whom the scale has been presented will sign.

### The Gem Saw Filer.

In Fig. 1 of the engravings we show a little device for regulating the angle at which a saw file is held in the act of filing a saw, which is being put upon the market by the Gem Saw Filing Company, Post Office box 1507, New York City. Fig. 2 shows the application of the device to the file, and indicates how it facilitates using the file. The point of three-cor-

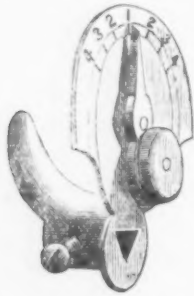


Fig. 1.—Gem Saw Filer.

nered file is inserted in the hole provided for the purpose, and the article is fastened against it by means of the set-screw shown in the engraving. The lower part of the pointer which swings under the index is weighted and moves by gravity, thus showing the angle to which the file is tilted, either right or left. Accordingly, the filer has no excuse for holding the file in any other position than at the angle that

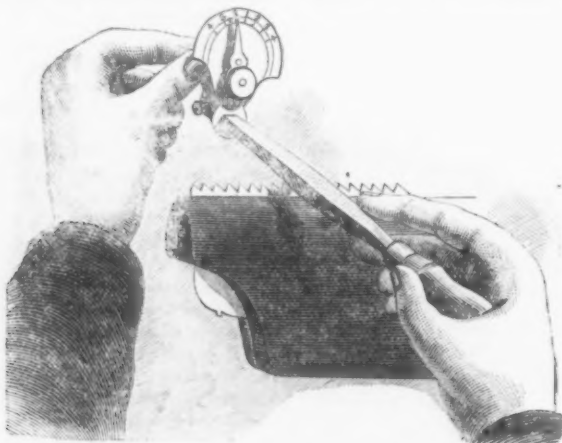


Fig. 2.—Gem Saw Filer in Use.

he desires, and has means at hand for constantly keeping the file in one position. The graduated plate is bent slightly backward, so that the index is always in sight of the operator. A thumb-piece just back of the graduated plate affords a means of holding and bearing on the end of the file, which greatly facilitates the labor of filing the saw. The article is made of brass, and seems from the sample submitted well adapted for the purpose which the inventor has in view.

### Moore's Concave Reamer.

The Moore & Barnes Mfg. Company, 103 Chambers street, New York, and Phoenix, N. Y., are putting on the market the



Moore's Concave Reamer.

reamer represented above. As shown in the illustration, this reamer is square tapered, ground concave, a construction which is referred to as presenting the best cutting edge, while it also gives space for

freeing the chips. The manufacturers refer to it as made of the best tool steel, very carefully tempered.

### Curious Ideas About the Fusible Plug.

The *Locomotive*, published by the Hartford Steam Boiler Inspection and Insurance Co., of Hartford, Conn., recounts a number of peculiar and suggestive experiences relative to fusible boiler plugs. It appears that not long since application was made for insurance on a boiler of the portable locomotive type. When the inspector made his examination he found that the crown-sheet had been so badly overheated and bagged down that the stays were all started, and that the boiler could not be safely run until a new crown-sheet had been put in. The fusible plug, properly located, was found unmelted. The owner's attention was called to the state of affairs and after expressing his regret at being obliged to get a new crown-sheet, he expressed his gratification that the fusible plug was intact. "Why," said he, "I was bothered awfully with that plug. It melted out three or four times, and I had to put in new ones until I got Mr. Blank to fix it. He said he would fix it so it wouldn't bother me any more." And so it seemed. The plug was filled with hard Babbitt metal, and a bill of about \$100 for a new crown-sheet was the result. But the proprietor was happy because he wasn't "bothered" by the plug melting out.

Another recent case was as follows: One of the inspectors in going into the furnace of a horizontal tabular boiler

"bumped" his head against something projecting down from the furnace plates directly over the fire. Investigation revealed the fact that it was the fusible plug, and it was put into the lowest point of the boiler-shell over the fire. Inquiry developed the fact that it had been put there by direction of a traveling salesman of various steam appliances, who assured them that "it was the proper place for it; he had put hundreds in there and never had any melt out yet," which latter statement was quite easy to believe. It is quite a common thing, says the *Locomotive*, regarding the above, where they have been "bothered" by the melting of fusible plugs, to find solid cast-iron plugs screwed in. This effectually stops the trouble (?).

### The Queen City Press.

The Shepard Hardware Company, Buffalo, N. Y., are putting on the market the Queen City Press, illustrated in the cuts herewith given. It is intended for use for

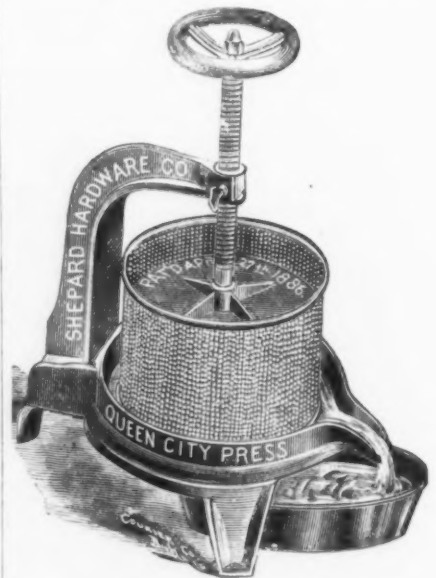


Fig. 1.—The Queen City Press.

jelly, wine, catsup, lard, cheese, corn-beef, meat juice, &c. Fig. 1 gives a general view of the press, showing its appearance, and indicating its construction and special features, while Fig. 2 shows the form of the screw by which the power is applied, and indicates the manner in which it is connected with the frame. This press is made of iron with the exception of the perforated cylinder, which is of heavy tin, and the brass nut through which the screw passes, shown in Fig. 2, and the thumb-nut by which it is held in place, as in Fig. 1. The manufacturers emphasize the fact that the screw thus works through brass, instead of, as other presses, through cast iron, thus avoiding the liability to break, and soon wear out. It is to be observed that this press requires no fastening, and that its legs are long enough to admit of a large pan being put under for material or juice, the 2-quart size, which we have seen, giving a space of 3 inches for this purpose. Of this press four sizes are made, No. 0, which is intended especially for meat juice, and 2-quart, 4-quart and 8-quart sizes for general use. The 2-quart and 4-quart sizes have a removable galvanized-iron pan set under the plunger on which the cylinder rests, while the No. 0 and the 8-quart have this as part of the frame. The press is strongly made, and the frame and wheel are painted in brilliant colors. It is put on the market by the company with confidence that it will be found to possess superior advantages, and meet the requirements of the trade.



Fig. 2.—Form of Screw.

The estimates of acreage, product and value of corn, wheat and oats for each State and Territory have been prepared for publication by the statistician of the Department of Agriculture. The area of corn harvested, excluding abandoned or worthless acreage, is 72,000,000 acres in round numbers; product, 1,456,000,000 bushels; value, \$646,000,000. Area of wheat, 37,400,000 acres; product, 456,000,000 bushels; value, \$309,000,000. Area in oats, nearly 26,000,000 acres; product, 659,000,000 bushels; value, \$200,000,000.



**Boughton's Solid Adjustable Screen.**

J. W. Boughton, 1207 Chestnut street, Philadelphia, is putting on the market for the coming season the window screen represented in the accompanying illustrations. Fig. 1 gives a general view of this screen

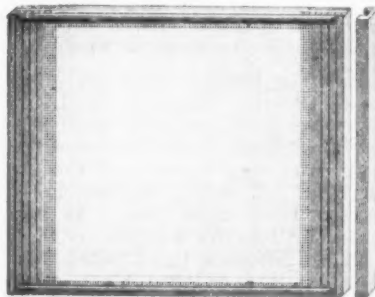


Fig. 1.—Boughton's Solid Adjustable Screen.

It is intimated that Germans will also provide capital for the proposed transcontinental railway to Acapulco, on the Pacific. German mercantile houses already control a large portion of the wholesale trade of Mexico, to the detriment of their English rivals, who naturally are averse to a

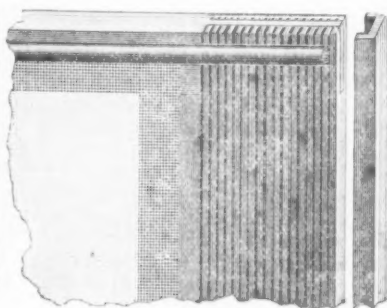


Fig. 2.—Details of Construction.

as placed in the window, and Fig. 2 indicates the special features of its construction and the manner in which it is adjusted to fit windows of different widths. It will be observed that the outside stiles are made of one wide piece of wood reeded on both sides and having the tenons of the top and bottom rails running clear through them. Fig. 3 illustrates in full size a section of the stile and sliding strips at the side. From this it will be seen that through the stile to about  $\frac{1}{16}$  inch of the groove between the reeds on the opposite side are saw cuts which are described as so fine as not to be noticed, and are  $\frac{1}{4}$ -inch apart. The screen, which is  $\frac{1}{2}$ -inch thick, slides up and down in the window on a strip at the side with a groove in it, this strip being shown in Fig. 1 and a section of it full size given in Fig. 3. The directions given for adjusting the screen indicate also its construction, and are as follows: "To adjust the screen, nail the grooved strips on the sides of the window inside of the sash. Then place the screen to the window and mark the width required. Cut off the ends of the tenons at the top and bottom with a thin saw, and take a pocket or table knife and run through the saw cut, taking off the width necessary from each side, and

financial policy calculated to insure German supremacy.

**Extension Plumb and Level.**

An improvement that greatly enlarges the scope of an ordinary carpenter's level is being introduced by Tower & Lyon, 95 Chambers street, New York. It is known



Fig. 1.—Extension Plumb and Level with Sights Out of Use.

as Wood's Patent Extension Plumb and Level. The appearance of the device is shown in Figs. 1 and 2 of the engravings. To an ordinary carpenter's level there is attached, at each end of the stock, a brass plate. In one of these is a sight, while through the other a larger opening is cut, and across it is stretched a wire. The idea is that by these sights the level may be used for leveling purposes. The sight

and may be relied upon to extend the horizontal line to any distance required. They state further that a compact 18-inch level, with this improvement, will do more than a large level—say, 30 inches long—without it. The small level is convenient to handle and light to carry; hence the general advantages.

**A New Kitchen Utensil.**

O. W. Bullock, Springfield, Mass., is putting on the market a Patent Combined Steel Meat Chopper, Bone Saw and Steak



Combined Meat Chopper, Mincing Knife, &amp;c.

Tenderer, which is represented in the accompanying illustration, which represents it about  $\frac{1}{2}$  size, its entire length in the position shown in the cut being  $7\frac{3}{4}$  inches. The blade of this kitchen tool is made from saw steel shaped as shown in the illustration,

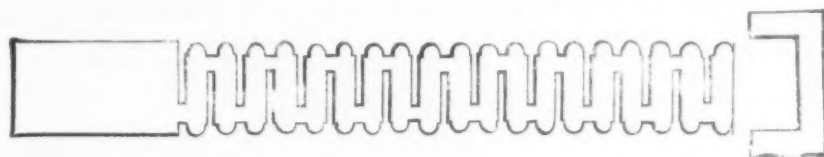


Fig. 3.—Full Size Section of the Side Stile and Sliding Strips at the Side.

place the screen in position. Save the pieces that are taken off, as they can be nailed or screwed on again for use in a wider window." In alluding to this screen the manufacturer mentions the following advantages possessed by it: That it has no rods or bars in the middle; that it is exceptionally light, a crate of two dozen being only 18 inches thick, so that nearly twice the number of screens can be packed in the same space as is required for other screens; and that it is offered at an exceptionally low price.

It is semi-officially stated that the Mexican Government loan, which President Diaz was authorized to make by the last Congress, has been taken by Bleichroder, the German banker. This loan is in the nature of a funding scheme for the purpose of taking up all the outstanding Mexican securities and replacing them with new bonds, in accordance with an arrangement made some time ago with English holders.

pieces, already referred to and clearly shown in the engravings, work automatically in the ends of the level. They are pushed down out of the way when not in use, and instantly spring up into position, as shown in the cut, upon touching a button that is provided in the side of the



Fig. 2.—Extension Plumb and Level with Sights Elevated.

stock. When the sights are down the level is in the usual shape for use. This tool is available for lengths of 100 feet or more, and also for shorter lengths, without the cumbersome and unreliable straight-edge commonly used with the ordinary straight level. The makers inform us that the sights are accurately adjusted

tion, the curved edge being intended for use as a meat chopper or mincing knife, and the other edges for use as a saw and steak tenderer. This blade revolves and is held in any desired position by a thumb nut, so as to permit the convenient use of either of its edges. The manufacturer alludes to the convenience of this tool, and the fact that it finds very ready sale.

The Cleveland Freight Rate Committee on January 5 made the following rates on iron which comes under the fourth and fifth classes in freight classification: To New York—Fourth class, 21 $\frac{1}{2}$ , 100 pounds; fifth class, 17 $\frac{1}{2}$ . Boston—Fourth class, 31 $\frac{1}{2}$ ; fifth class, 28 $\frac{1}{2}$ . Philadelphia—Fourth class, 19 $\frac{1}{2}$ ; fifth class, 15 $\frac{1}{2}$ . Baltimore—Fourth class, 18 $\frac{1}{2}$ ; fifth class, 14 $\frac{1}{2}$ . The old rate to New York was 27 $\frac{1}{2}$  for fourth class and 231 for fifth class.

There are some 40 manufacturers of rubber in the United States, representing a capital of nearly \$20,000,000, but profits for four years past have been so small that several

have been overtaken with bankruptcy. Two associations recently formed have just held a semi-annual meeting in this city and adopted prices slightly in advance of last year's rate, on an average of 5 per cent., the advance, it is claimed, being necessary to enable manufacturers to realize 6 per cent. on their plants.

## MANUFACTURING.

### Iron and Steel.

A dispatch from Wheeling, W. Va., under date of the 8th inst., says: "A movement looking to the uniting of the scattered forces of the old nailers and feeders of the Ohio Valley and the West was begun here to-day. A mass meeting was held in Trades Assembly Hall. The utmost unanimity prevailed. No reference was made by any of the speakers to past differences. A motion to organize under the banner of the Amalgamated Association of Iron and Steel Workers was carried by a unanimous vote, and those present, numbering over 200, were at once taken in the organization. There are but few remaining outside, and those will join to-morrow."

Robert E. Masters, formerly with the Tredegar Iron Works, at Richmond, Va., has resigned his position to accept the general superintendency of the Marshall Car and Foundry Company's plant, at Marshall, Texas.

The Ohio Falls Iron Works, at New Albany, Ind., closed up the year's business on the evening of the 31st ult. During the year they made 8513 tons of finished merchant bar, bridge and stay-bolt iron, and sold during the year more iron than they made. They ran during the year 293 days, and during this long, steady run the works have not wanted for any of the materials with which to run, but have at all times had a full supply of pig iron, scrap iron, iron ore, clay, brick and coal with which to prosecute their work. They commenced work on the business of 1888 on the 3d inst., and are running full in all departments.

The Cambria Iron Company, of Johnstown, Pa., have decided to make a reduction in wages of 10 per cent. on February 1 unless business improves within a few weeks. The reduction was to have dated from January 15, but was postponed.

It is said that the plant of the Middlesex Rolling Mill Company, at Middlesex, Pa., which has been idle for some months, will shortly be put in operation. A party visited the plant recently, and expressed his intention of either buying the plant or leasing it, and if successful will put it in operation.

The Charlotte Furnace Company, Limited, at Scottdale, Pa., have banked their blast furnace at the above place, because of the refusal of the employees to submit to a reduction of 12½ per cent. in their wages.

Some of the largest steam and mud drums ever built in Newcastle, Pa., are now in course of construction at the works of J. P. Witherow, at that place. The steam drums are each about 36 inches in diameter, and 70 feet long. They will be attached to a battery of steel boilers, also to be made by the above firm, and intended for the Oregon Iron and Steel Company, at Oswego, Ore.

The Belleville Nail Company, Belleville, Ill., have resumed operations with a full force of men. This plant has been closed for three weeks on account of a scarcity of water. They now have a good supply and at present prices will continue in operation.

The Pennsylvania Construction Company, of Pittsburgh, whose works are located at Uniontown, Pa., are at work on a large number of columns for use in the Government building at Pittsburgh.

A serious danger, which was happily averted, threatened the destruction of the Twenty-ninth street iron works of Carnegie, Phipps & Co., Limited, at Pittsburgh, during last week. The mill is located largely on "made ground" or cinder banks, which were discovered to be on fire under the main track of the Junction Rail-

road, several side tracks of the Allegheny Valley Railroad and the "bumper" and blacksmith shops of the mill. The flames had also extended into the new 22-inch mill and had almost reached a battery of boilers. Decisive steps were taken. Every available man was put to work digging trenches, which two huge pumps filled with water as fast as dug. Trenches were made the entire length of the mill, which it is thought will hold the fire back until a rise in the river quenches it.

The Jefferson Iron Works, at Steubenville, Ohio, recently notified the nailers in their employ that the scale for cutting nails would be reduced to 15 cents, to take effect on the 1st inst. The employees, with a few exceptions, refused to accept the reduction, and, as a result, but two or three nailers are now at work. It is thought the difficulty will be satisfactorily adjusted in a short time.

At a recent meeting of the stockholders of the Eastern Forge Company, of Portland, Me., it was voted to rebuild at once and to construct modern buildings. The machine shop will be of wood, 35 x 150 feet in size, and the forge will be built of wood or iron, but which has not yet been decided. The buildings are to be constructed between 45 and 90 days.

The employees of the Dunbar Furnace Company, at Dunbar, Pa., have refused to accept a reduction of 10 per cent. in their wages and have gone out on strike.

It is stated that the plant of the Wheatland Rolling Mill Company, at Wheatland, Pa., which has been idle for about six months, will be put in operation about February 1.

Benjamin F. Jennings, of Pittsburgh, has filed a bill in equity in that city asking the court to adjust the difficulty between himself and his partner, Joseph G. Beale. The two formerly owned the steel works of Jennings, Beale & Co., at Leechburg, Pa., but by mutual consent disposed of the plant to a stock company October 27, 1886, in which each retained a large amount of stock. On February 21, 1887, they agreed that Jennings should assume all the liabilities of the firm, release Beale from payment of a subscription of \$10,000 and assume a mortgage given by the latter on condition that Beale would transfer all his interests to Jennings. They went over the books together, but failed to arrive at a satisfactory understanding of the accounts. Beale threatened to sue Jennings, who filed a bill in equity. He also asks for an injunction restraining Beale from carrying out his threat of suing upon the agreement.

The trouble between the Philadelphia Bridge Works, at Pottstown, Pa., and their molders, which has caused a partial suspension of that department for some time, has been adjusted, and the works have started up with a full force of men. The company have large orders on hand and will turn out about 50 tons of castings a day. They have a contract to furnish 15,000 moldings for the Philadelphia Traction Company.

The several mills of the Catasauqua Mfg. Company, at Catasauqua, Pa., and Fernald, Pa., have been closed down for the purpose of stock-taking and making repairs. As soon as these are completed operations will again be resumed.

Application for a charter of incorporation has been applied for by the Spears Axle Mfg. Company, which has just been organized at Wheeling, W. Va., with a capital stock of \$200,000. The incorporators are: Ralph Spears, N. Riester, Andrew Reitz, J. G. Hoffman, Sr., and J. G. Hoffman, Jr. The works will be located south of the plant of the Belmont Nail Company, in that city, and will consist of a corrugated iron building,

50 x 200 feet and one story high. The new company will not confine itself to the manufacture of axles, though that will be its only product at the outset. It will, as the demands are made and the openings appear, enlarge and engage in the manufacture of everything in the iron line that promises to yield a paying return. It will roll its own iron, and in the way of machinery and appliances have everything of the latest and most approved kind.

In addition to the changes made in the firm of Carnegie, Phipps & Co., Limited, of Pittsburgh, which were noted in our issue of last week, the retirement of W. H. Singer, who was treasurer of the above firm, and H. P. Smith, the former secretary, has since taken place. As is well known, Mr. Singer is a member of the firm of Singer, Nimick & Co., Limited, of the above city, and resigned his position in order to devote his exclusive attention to the interests of his own firm. Mr. Singer will retain his position as a member of the Board of Directors of Carnegie, Phipps & Co., Limited. Mr. Smith, whose interest was a small one, has retired from the firm altogether, and is not now identified with it in any way.

The affairs of the McDonald Rolling Mills are out of court, the works and property having been sold by Receiver Ferguson to Gabriel C. McDonald, one of the brothers composing the firm of owners, A. McDonald & Bro., for \$104,000. Judge Barclay approved the sale, which included the real estate, buildings and nearly all the contents of the mill. The litigation grew out of an application on the part of one of the firm for dissolution of partnership and the appointment of a receiver. The solvency of the firm was not in question, as it represented one of the oldest and most substantial concerns in the city.—*Age of Steel, St. Louis.*

In the Pittsburgh papers of last week appeared a statement to the effect that the Moorhead-McCleane Company, of that city, proprietors of the Soho Furnace and Rolling Mills, have decided to spend about \$250,000 in the erection of a blast furnace and other improvements, and that contracts for the work had already been let. We are authoritatively informed that there is no truth whatever in the report. The firm are at present engaged in making the regular annual repairs to their plant, which probably gave rise to the rumor.

It is expected that the furnace now being built by the Pulaski Iron Company, at Pulaski City, Va., will be ready to blow in about February 1.

In February or March next the Tennessee Iron and Mfg. Company, of Memphis, Tenn., are going to put up an iron furnace at Duck Hill, Miss. They have \$800,000 to commence with, and will have all they need. Y. T. Negs, 336 Front street, Memphis, Tenn., is secretary; W. D. Bethel, president State National Bank, Memphis, president; H. McNeely, Memphis, vice-president. They have bought and paid for 8000 acres of land here, and are getting hold of all they can buy.—*Chattanooga Tradesman.*

The Crane Iron Company, at Catasauqua, Pa., have posted notices at their works of a 10 per cent. reduction in wages, to take effect on the 15th inst.

The new billet mill of the Pennsylvania Steel Company, at Steelton, Pa., which has been under process of construction for some time, will probably commence operations during the present week.

On the 5th inst. the Pittsburgh Steel Casting Company, of Pittsburgh, commenced work on the cast-steel gun which they have contracted to make for the United States Government. The gun will be made in accordance with the designs and plans of Wm. Hainsworth, the super-



intendent of the company. Its weight will be 5½ tons, and its total length 193.53 inches. The proposal of the company to the Government was to furnish a gun having the following physical characteristics: Ultimate strength, 8000 lbs. per square inch. Elastic limit, 4000 lbs. per square inch. Elongation 7 per cent. in 2 inches. Reduction, 7 per cent. in 2 inches.

The company state that they have no fear but what they will be able to fulfill every condition called for in the contract, and we trust that their efforts may be crowned with every success.

Lean & Blair, engineers and contractors, at Pittsburgh, are erecting a 20-ton Lash steel melting furnace for the Standard Steel Casting Company, at Thurlow, Pa. It is the intention to use producer gas in the furnace when completed, and as this is largely in the nature of an experiment the results will be watched for with considerable interest. Until now the furnace has only been used when natural gas was available.

A dispatch from Kansas City, Mo., states that on the night of the 31st ult. the hardware store of the Stevens & Brace Iron Company was destroyed by fire. The loss was \$80,000 on the stock, which was insured for \$60,000. The building was owned by Charles Francis Adams, of Boston, and was valued at \$25,000, fully covered by insurance.

The North Chicago Rolling Mill Company are revising their wages list for the coming year, with respect to men employed by the day. An average reduction of 10 per cent. is expected to be effected. With the tonnage men no new arrangement is needed, as their wages are regulated from month to month by the price received for the rails they have made, according to a sliding scale adopted some two years ago by this company, acting independently of other companies.

Zug & Co., proprietors of the Sable Iron and Nail Works, at Pittsburgh, inform us that the report that they were about to resume the manufacture of steel nails is without foundation. They have not made any nails for more than two years, and will not make any till both the demand and prices for this class of goods show a decided improvement.

#### Machinery.

George Westinghouse, Jr., of Pittsburgh, has secured a patent on a new arrangement for braking all the wheels on a six-wheeled railroad car truck. Heretofore brakes have been so constructed as to only allow brake-shoes to work on the outside wheels of these trucks. The middle wheels did not have on any brakes, and by the new device the braking power is increased one-third. The arrangement was first tried on a car Mr. Westinghouse was traveling in and gave perfect satisfaction.

A dispatch from Cincinnati, Ohio, under date of the 4th inst., says: "The big suit of David Armstrong, receiver of the late Fidelity National Bank, against Whitley, Fassler & Kelly, the Champion Machine Company, E. S. Harper & Co., Swift's Iron and Steel Works and the Toronto Reaper and Mower Company was settled to-day by a consent order directing the receiver to compromise the claims. The paper of the Champion Machine Company, amounting to \$182,547.29 and indorsed by Whitley, Fassler & Kelly, will be paid in full. The remainder, something over \$250,000, of the paper of the other firms named and indorsed by Whitley, Fassler & Kelly, will be compromised at 50 cents on the dollar, and will be secured by the issuance of \$500,000 worth of bonds by Whitley, Fassler & Kelly, bearing 3 per cent. interest and due in five years, \$100,000 each year. The Fidelity directors have consented to the settlement, even including Mr. Zimmerman, who is in Europe.

The bonds will be taken by Mr. Armstrong and the papers turned over to the defendants. They will be put on the market.

At a special meeting of the stockholders of the Westinghouse Air Brake Company, of Pittsburgh, held in that city on Friday, the 6th inst., the capital stock was increased from \$3,000,000 to \$5,000,000. The reason given for the increase is that it was made to properly represent the real value of the assets and air brake patents. The plant of this company in Allegheny City furnishes plenty of room for the manufacture of air brakes for passenger trains, but in all probability an entirely new and much larger plant will be established on the grounds recently purchased at Turtle Creek, about 11 miles from Pittsburgh, as the company propose to enter much more heavily into the manufacture of freight air brakes. It is stated that \$1,000,000 of the increase in capital stock is to go to stockholders in the shape of a dividend, and the other \$1,000,000 will be available for subscription at par by railroad corporations which adopt the improved Westinghouse freight brake.

The Atherton Machine Company, Lowell, Mass., have appointed Mr. Charles H. Wilcox, of Atlanta, Ga., their agent to represent their business interests in the South.

Under date of the 2d James O. Morse, who has been established since 1849 as manufacturer and dealer in wrought-iron pipe and tubes, brass and iron fittings, at 76 John street and 29 to 33 Platt street, New York, announces that he has sold his interest and good-will in the business so long conducted in the above name to Messrs. A. A. Dame, R. E. Townsend and Morse Burtis, who will continue it in the name of the Dame & Townsend Company.

The Davidson Motor Company have been organized at Cincinnati, Ohio, with a capital of \$100,000, for the purpose of manufacturing the Davidson steam motor, recently patented. The plant will be at Nashville, Tenn., and will be erected at an early date.

The Babcock & Wilcox Company, of New York, announce the following sales of boilers for last month:

	Horse-power.
Solvay Process Company, Syracuse, N. Y., fifth order.....	108
Wm. Weightman, Philadelphia, second order.....	330
C. B. Grubb & Son, Lancaster, Henry Clay Furnace.....	240
J. & G. Fowler, New York, for Cuba, second order.....	146
Alex. Smith & Sons' Carpet Company, Yonkers, fifth order.....	200
Glass-Edsell Paper Company, Delaware, Ohio, second order.....	136
Girard Estate, Philadelphia, third order..	415
Midvale Steel Company, Nicetown, Philadelphia, Pa.....	272
Sone & Fleming Mfg. Company, Limited, New York, second order.....	208
Geo. Bruce's Son & Co., New York, for Mexico, second order.....	92
South Bend Toy Mfg. Company, South Bend, Ind., second order.....	136
James Simpson & Co., London, England..	108
Walker Bros., London, England, for Ceylon, sixth order.....	15
Langworthy Bros, Salford, England.....	173
Ing'o San Lino, Cienfuegos, Cuba.....	292
J. Simpson & Co., London, England, for Bournemouth Gas and Water Company.	169
Imperial Continental Gas Association, London, for Vienna Theatre.....	744
Total.....	3,724

The Dial Engine Works, to manufacture steam engines and boilers, have been incorporated at Columbia, S. C.

Mr. Samuel T. Williams, 167 North street, Baltimore, Md., writes us that he is now at work on a number of engines for electric lighting purposes.

#### Hardware.

Christmas was observed in a pleasant way by the Champion Iron Fence Company, Kenton, Ohio. At 4 o'clock on the Saturday preceding the men were summoned into the large office room of the company, where

Major Hopkins, who had charge of the affair, made an address to them, which is referred to as full of good advice, demonstrating his interest in their welfare. He was followed by the president, who alluded to the antagonism existing in many places between manufacturers and their men, and expressed his gratification that nothing of the kind existed there. He then spoke of the position held by the Champion Company and the rapid growth of their business. Seven years ago they employed but 30 men and now about five times that number, their business having increased from \$60,000 a year to \$200,000, shipments being made to every State and territory in the United States. They had brought in more than 2,000 tons of iron the past year, and sent out a like amount of finished work, and during the year they expended \$10,000 in improvements. He counseled the workmen to exactness and precision, referring to the fact that he had experience both in the office and in the shops. After other kindly, wise and pleasant remarks, he presented each of the employees with a basket containing a dressed turkey, a can of oysters, a quart of strawberries, a box of candy and a package of sugar, with the kindest wishes of the company for a merry Christmas. Other addresses were made by the superintendent and secretary, and appropriate responses by the foremen of the different departments.

In one day recently the New Castle Wire Nail Company, of New Castle, Pa., turned out 708 kegs of wire nails at their factory. This is the largest output ever made in one day by this establishment.

The Abilene Lock Works, with a capital stock of \$15,000, are reported to have been organized at Abilene, Kan., John M. Fisher and others are the incorporators.

A St. Louis industry, just incorporated, is the Hulbert Fence and Wire Company, manufacturers of all kinds of fencing and wire goods. A patented specialty of the new company is a safety barbed netting meshed by barbs which project only in the plane of the fabric, and to cost no more than the common dangerous barbed wire. They also propose to furnish by the use of improved machinery all the heavy grades of hexagonal nettings at prices to compete favorably with barbed wire, and are putting on the market a \$25 farm loom for weaving both netting and picket fence in the field. The company will manufacture on a more extensive scale and supply to the trade the A. G. Hulbert patent ornamental fenceings, iron posts, gates, &c., which are well known. They are soon to issue a condensed catalogue, which is now in press.

The Reading Hardware Company, Reading, Pa., have just completed an addition to their brass foundry, which will more than double their capacity in this department. They have purchased all the cast butt machinery of the Clark Mfg. Company, Buffalo, N. Y., and have removed it to Reading, and added same to the butt department, which will increase their output in this line about one-third. They have also secured a lease of the large works formerly operated by the Manhattan Hardware Company, at Reading, and which they will put into operation at once. These works are splendidly equipped for turning out goods rapidly, and will be run on a class of goods which they have been unable heretofore to produce fast enough to supply the demand. With these increased facilities for producing goods they feel confident that they can supply all future demands promptly.

In our issue of the 15th inst. we made mention of the fact that the Cambria Iron Company, of Johnstown, Pa., had decided to engage in the manufacture of barbed wire. We have recently received a communication from the company regarding

this matter, which reads as follows: "This company have received a lease from the Washburn & Moen Mfg. Company, to make 8000 tons of barbed wire annually. They have purchased the Lyman Company's plant formerly owned by Sherman & Marsh, of Chicago, and will put the machinery for making two and four point barb wire in operation at Johnstown at once. They will also make their linked barb wire more extensively, and expect to market about 12,000 tons of their product of wire in the form of barbed fence wire."

The Seymour Mfg. Company, of Seymour, Conn., whose works were partially burned, will at once be rebuilt. The tubing and copper rolling department was not much injured. The loss was \$60,000.

The stockholders in the new cutlery factory, Wilkesbarre, Pa., met January 6 and effected an organization, Col. G. Murray Reynolds presiding. The following directors were unanimously elected: W. S. McLean, R. F. Walsh, Isaac E. Ross, George K. Powell, Aaron I. Sanson, Jr., John James and James M. Norris. The name of the Sanson Cutlery Company of Wilkesbarre, was agreed upon, and Abram Nesbitt was elected treasurer and C. Ben Johnson secretary of the corporation. After the stockholders had adjourned the directors met and chose W. S. McLean president and George K. Powell vice-president. A committee of three was appointed to get a charter and plans for buildings, and to act as an executive committee in all necessary preliminary work. The scheme will be pushed vigorously. The sentiment of the meeting plainly indicated that if additional money is needed it will be promptly subscribed. The building of the new factory will be of two stories, brick, 110 x 40 feet in dimensions, with wings for office, packing and engine rooms. The walls will be constructed of sufficient thickness to support the machinery, the heaviest part of which will be several large grindstones 6 feet in diameter, to make 500 or 600 revolutions per minute. The charter will be obtained probably in three weeks, at which time the plans will be ready, and the construction of the building will begin as soon as possible thereafter.

The firm of Sidney Shepard & Co., of Buffalo, N. Y., proprietors of the Buffalo Stamping Works, established in 1836, have marked the advent of the second half-century of their existence as a firm by extensive improvements. They were occasioned much serious inconvenience by the destruction of their offices and warerooms by fire about a year since, but have arisen from the ashes, and established that department of their business in the handsome and commodious building, Nos. 145, 147 and 149 Seneca street, to which we have already referred in detail in these columns. Realizing that the visitation of their works by a similar calamity would be an occurrence even more serious than was the destruction of the stock in store, they have recently taken steps to render this practically impossible by the introduction of the automatic fire sprinkler system throughout their entire plant. Through the agency of pumping engines immense tanks of an aggregate capacity of about 50,000 gallons, located on the roofs and in the basements of the different buildings, and an extended system of overhead piping, every foot of floor area is brought within range of streams of water from the sprinklers, which are opened automatically if the temperature rises above a certain limit. There have been two large four-story buildings erected during the past summer to accommodate certain branches of the business which have increased so rapidly as to outgrow the quarters occupied. The opening of the new year finds this house with enlarged facilities in all departments, which will enable them to

meet the increasing demand for their justly celebrated line with usual promptness.

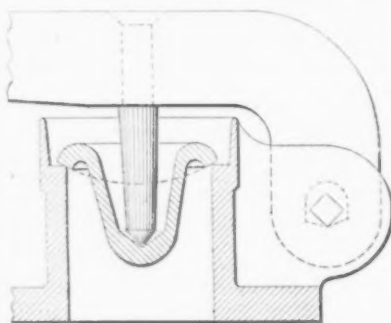
#### Miscellaneous.

A meeting of all the natural gas companies of the Ohio Valley, as far west as Wheeling, W. Va., and Youngstown, Ohio, was held in the Monongahela House, Pittsburgh, on Wednesday, the 4th inst. The following companies were represented: The Royal Steubenville; the Wheeling, of Wheeling and Bellaire; the Mahoning, of Youngstown; the Citizens, of Beaver Falls; Shenango, New Castle; Natural Gas Company of West Virginia, Wheeling; Columbia, Sharon; Home, Youngstown; Bridgewater, Rochester; Ohio Valley Gas Company, East Liverpool; Ohio Valley Gas Company, of Sewickley; The Bellevue, Bellevue; Lawrence Gas Company, of Pennsylvania, and the Mercer Gas Company, of Mercer. The object of the meeting was to form a Natural Gas Association which will lead to the adoption of uniform prices. Another meeting will be held at the same place on the 12th inst.

The Missouri Car and Foundry Company, of St. Louis, did \$2,750,000 worth of business during 1887, and at the present time are working to their full capacity—20 finished cars per day. The contracts they have in process of execution call for 1000 cars, distributed in part as follows: 400 box and 400 stock cars for the Atchison, Topeka and Santa Fé, 200 coal cars for the Pennsylvania, 50 coal cars for the Kansas City and Southern, 150 coal cars for the Missouri Pacific, 9 caboose cars for the Kansas City, Fort Scott and Gulf. The freight car demand promises to be as good with them as during 1887.

#### A Seatless Safety-Valve.

A recent boiler explosion in England has brought out some discussion in *Engineering* as to the time at which seatless safety-valves were first brought out.



A Seatless Safety Valve.

One of the correspondents has supplied an illustration—which we reproduce here—of such a valve, which was applied to stationary and locomotive boilers more than 30 years ago at the railway foundry at Leeds, England. The application, we are told, was due to the late Mr. R. McIntyre, formerly one of the foremen at these works, and for 25 years afterward manager at the Boyne Engine Works, Leeds, where (as well as at neighboring works) hundreds of valves on this principle have been applied to the boilers of locomotives, and further improved by having the fulcrum of the lever hung on a steelyard pin. The engraving fully explains the arrangement.

The Reading Railroad Company's annual meeting approved of the reorganization scheme, but no reference was made to the laborers' strike. Austin Corbin, in the subsequent proceedings, was re-elected president. A resolution proposing Mr. Childs as an arbitrator of pending difficulties was laid on the table. President Austin Corbin personally read his annual

report, which showed the gross earnings of the railroad company for the twelve months ended November 30, 1887, to have been \$21,762,929, and the net earnings \$10,981,571. The gross earnings of the Coal and Iron Company for the same period were \$19,425,807, and the net earnings, \$1,448,482. The combined operations of both companies show an increase in gross earnings, compared with 1886, of \$5,505,640.71, and increase in working expenses of \$411,189.77. The combined net earnings were \$12,430,053.68, the largest in the history of the company, a clear increase of \$5,094,450.94 over 1886. There was a total decrease of interest payments by the combined companies of \$936,142.96, and the result of the year's operations shows a combined profit of \$2,857,267.01, compared with a loss of \$3,492,883.63 in 1886, showing a total increase in profits of \$6,350,150.64.

#### Machine Towels.

The American Silk Mfg. Company, of St. Louis, Mo., are supplying the market with what they call machine towels, manufactured out of silk waste. Cotton-waste, rags, litter, hemp, fiber, &c., the regular material used up to the present time, have disadvantages not only to the laborer, but likewise to the machines. Cotton-waste, when saturated with oil, easily inflames, and carries, therefore with it constant danger of fire, besides being most lavishly used, as no trace can be kept of it. Rags and flitter are objectionable on sanitary grounds. All of above-named materials loose more or less small particles of fiber by friction, which work into the finer parts of the machinery and in time affect them seriously.

The machine towels, on the other hand, are claimed to entail no danger of spontaneous combustion, even if piled up in a heated and oily condition. They are further claimed to leave no fiber on any part of the machinery, to be superior for their softness, elasticity and capability of easily absorbing any greasy substances, and to possess the property of taking up and retaining in their meshes any rust or particles of foreign matter with which they come into contact. We understand that they can readily be washed over and over again without losing any of their properties. The control is easily established by giving a certain number to the men, who have to return them after use. The general size of the wipers in demand is 14 inches square, though they can be furnished in any size desired. The washing, which enables the using of the wipers from 10 to 15 times, is done by allowing the greasy wipers to lay over night in a weak solution of lye and soap, to be rinsed out next morning in hot water. A simple boiling of the wipers in soda is also recommended.

Among the various uses of celluloid it would appear—according to the *Annales Industrielles*—to be a suitable sheathing for ships in place of copper. A French company now undertake to supply the substance for this at 9 francs per square meter (about 16.7 cents per square foot) and per millimeter (0.04 inch) of thickness. In experiments by M. Butaine plates of celluloid applied to various vessels in January last were removed five or six months after and found quite intact and free from marine vegetation, which was abundant on parts uncovered.

The advance in quicksilver has given great impetus to its production in California. The estimated product for 1887 is 31,000 flasks, and the export 18,000 flasks. The price jumped from about \$37 to \$50 per flask during the last three weeks.



### Is Chili an Oligarchy?

To the Editor of *The Iron Age*.—In your issue of the 23d ult. you publish a very interesting letter on "The Industrial and Financial Situation in the Argentine Republic," the purport of which is to rectify certain alleged misstatements of a correspondent in Buenos Ayres of the *Diario de Barcelona*.

It is impossible not to admire the patriotic earnestness with which your correspondent holds up the Argentine Republic to the world's admiration, evidently considering his task that of gilding refined gold. But I must take exception to one of his paragraphs in which he grows angry at the Spanish *Diario* for having ventured to draw a comparison between the benighted and retrograde Republic of Chili and the Argentine, and institutes a much more unfavorable one between those friendly republics.

The *Diario* had, it seems, remarked that while revolution was of chronic occurrence on the eastern coast, it had grown obsolete on the Pacific side of the continent. Its editor had been probably recalling episodes in the lives of Urquiza, Derqui, Mitre, Lopez, Jordan, not to mention several slight unpleasantnesses during the last decade, and had been told or had read that with the exception of a slight *émeute* in 1858 there has not been a revolution in Chili in nearly half a century. But however this might be, your correspondent evidently resents the reference to Chili and remarks:

"A glance at the true condition of both nations shows that the real difference between them lies in the fact that in the Argentine revolutions are a thing of the past, while in Chili they are coming. A country like the Argentine, where the native elements have, with all their frankness and strength, fought until the fittest have survived, cannot be properly compared with a country like Chili, where the masses of the people are reserving their strength to rebel at no distant day against their proud and ungracious lords. The republics that shrink from the healthful trials of liberty, apt to be fiercer when they have been delayed, are not as firmly established as those whose convulsions have been but the heroic struggle to implant liberty and civilization in a country as amply favored by nature as it was ill-prepared by its careless conquerors to enjoy in peace and utilize its natural resources. A nation is to be judged, not by what time and history have not yet enabled it to mature, but by the importance and number of the obstacles it had to overcome to reach its position. A rudimentary knowledge of Spanish-American history, unknown to most of its censors, would suffice to change the sneer at its revolutions to cordial admiration."

All this is very pretty, bordering on the pathetic, and being as much an admirer of the Argentine Republic as is your correspondent, I might have allowed it to pass unnoticed had I not read in a late issue of the *Nacion*, of Buenos Ayres, an opinion so entirely different from that of your correspondent that it occurred to me it might be interesting to your readers to contrast them. After speaking of the stability of Chili's institutions, the *Nacion* remarks:

"It has been said that Chili is a country of masters and slaves. \* \* \* In Chili no other titles of nobility are recognized than those earned by talent and education, honorable conduct, and, as elsewhere in the world, fortune worthily acquired. This is the only aristocracy known in Chili, the only one compatible with her republican and democratic character, and to which all may aspire who desire to do so, inasmuch as no title to enter it is necessary other than such as is easily and freely acquired by study in the schools, lyceums, institutes

and university, or such as is within reach of honorable labor. This is the aristocracy which governs Chili, and it does so with the free will of the people, because its power emanates from the people. Besides, no Government in Chili ever adopted any measure without previously consulting in public meetings and through the press the pleasure of the majority.

"When, therefore, it is evident that her rulers sacrificed their individual interests to the welfare of their country; when there is not an instance on record of one of them leaving power with an increase of fortune, and many where her statesmen have retired to private life well-nigh impoverished, and when it is notorious that all her public servants have had no other ambition than that of serving their country loyally and honorably, and with no other reward than the gratitude of their fellow-citizens, it is not difficult to understand how the masses of Chili, while respecting her institutions and her rulers, do so from no other motive or obligation than that dictated by their sense of justice, equity and convenience, and because it would be impossible to withhold from their public servants the only recompense they ask for. If, then, Chili be a nation of masters and slaves we sincerely trust she may never be emancipated from her slavery. It is a species of bondage unheard of until now where the lords are servants of their serfs, or, better still, where the rulers are the slaves of the people."

I submit now to the judgment of the readers of *The Iron Age* which is correct, your correspondent or the leading organ of the country the theme of his eulogies?

There have been cases in South America where the people have risen against their rulers, but there never could exist in Chili such an objectionable oligarchy as, for instance, that of the Unitarios in Buenos Ayres, and if there were there is no school in that republic in which such a leader of the masses as was Juan Manuel Rosas could be trained. x. x.

### WASHINGTON NEWS.

(From Our Regular Correspondent.)

WASHINGTON, D. C., January 10, 1888.

A desultory fire of economic eloquence has been kept up in the Senate ever since it met, in advance of the presentation of the real bone of contention between parties—the reduction of the surplus revenues. As the Senate is not the revenue legislating wing of Congress, their eloquence is of no special value just now, however.

Chairman Mills, of the Ways and Means, is applying himself to a measure which he hopes to have in shape very soon. In the meantime the multitudinous embryotic publicists who are on their first terms in Congress are turning out tariff bills with a freshness only possible among representatives who have not yet been probed in the real test of parliamentary contact of the conceit incident to their high sense of importance at home. The kaleidoscope of revenue reducing methods has taken many forms. Tariff-bill making is an innocent sort of amusement for legislators who have not yet cut their wisdom teeth in law making. It sounds well among their constituents, if it does come to an untimely end in committee pigeon-holes. The bill, and only bill which will have attention, will emanate from the chairman of the Committee on Ways and Means. Representative Milliken, of Maine, however, has a bill to take the tax off tobacco and duty off sugar, amounting in all to \$10,000,000, with a drawback or bounty of some \$10,000,000 to be paid to producers of cane sugar in Louisiana and beet root and sorghum sugar in Illinois, Kansas and elsewhere. The Republican position generally circles around the theory of taking

as little as possible or nothing, except perhaps sugar, with a drawback off customs, removing the tax on tobacco and taking it in part off whisky. The Randall idea is internal revenue repeal to the greatest extent—that is, removing all taxes on tobacco and perhaps part on whisky, 25 per cent. on sugar if acceptable to his friends and tariff adjustment to reduce customs where not injurious to labor, and to raise duties where destructive of certain lines of industry. The Democratic idea represented by Chairman Mills is \$50,000,000 to be taken out of the revenues from customs by free raw materials, reductions in the metal and other schedules claimed to no longer require the fostering care of a protective scale. These are the real propositions to be fought over.

Chairman Mills made a bad start when he commented upon the prospective work of his committee by saying: "We will now formulate a bill which we think will represent Democratic views, and any persons who place themselves in the way of its success will have occasion to regret it." Chairman Mills's greatest defect is his unbridled tongue. After everything had been quieted since his oral and oracular emissions pending the Oak View conference—into the councils of which he was not invited—about reading Randall and his followers out of the party, his first utterance upon his appointment as chairman was a threat. Mr. Randall and those who agree with him on methods of revenue reduction are ominously silent. They have been in conference and will await developments. If not called into consultation with a view to framing a compromise bill, as was originally promised, they will not support the committee measure. It begins to look as if Mr. Mills had fallen back into the same old rut which wrecked Morrison.

In order to enable the parties named, who failed to avail themselves of the decision of the courts changing the rate of duties on steel blooms, Mr. Randall has introduced a bill requiring the Secretary of the Treasury to pay sums exacted upon steel railway blooms imported into the United States prior to the act of March 3, 1883, in excess of the lawful rate of duty, or 30 per centum ad valorem, the amount of said excess to be adjusted in each case upon certified statements to be forwarded to the Treasury Department by the collectors of customs at the several ports where the excessive duties were exacted.

The following are the beneficiaries of this bill: J. F. Bailey & Co., \$77,034; Oliver L. Garrison, \$23,250; William Chisholm, president of the Cleveland Rolling Mill Company, \$24,750; A. E. Goddard & Co., \$51,300; Downing, Sheldon & Co., for the Joliet Steel Company, \$146,700; Herbert Brainard, as manager of the St. Albans Steel Works, \$25,000; H. C. Arbuckle, agent for C. W. Matthews \$14,087.55; Brown Bros. & Co., agents for C. W. Matthews, \$6536.25; C. W. Matthews, \$2482.95; E. Samuel & Co., \$2263; A. H. Childs, agent for H. W. Oliver, Jr., \$8646.75; Diamond State Iron Company, \$23,278; P. Wright & Sons, \$21,251; Baltimore and Ohio Railroad, \$26,281; Edgemoor Iron Company, \$60,000; Schrader & Ellery, \$6596.70; H. W. Oliver, Jr., and Lewis, Oliver & Phillips, \$3000; C. H. and E. Odell, agents for Sandusky Rolling Mills, \$66,181.94; Drexel, Morgan & Co., agents for Northern Pacific Railroad, \$14,171.40; A. H. Barney, agent for Northern Pacific Railroad, \$714.75; C. H. and E. Odell, for Northern Pacific Railroad, \$20,946.75; H. E. Collins & Co., \$45,000.

The amounts aggregate \$670,000. Refunds of large amounts already stated in *The Iron Age* have been paid to parties who availed themselves of the judicial decision within the provisions of the statutes.

# TRADE REPORT.

## British Iron and Metal Markets.

[Special Cable Dispatch to The Iron Age.]

LONDON, WEDNESDAY, JANUARY 11, 1888.

Business in Pig Iron has been quieter the past week and scarcely meets previous calculations. Large stocks evidently govern buyers' movements in some degree now that speculative sentiment has become calmer. Rumors of a probable increase in the output of Bessemer Iron, consequent upon recent reduction in the stock, have slightly weakened prices for that commodity, and Scotch Iron of some makes has also sold at a slight decline. Manufactured Iron generally continues in good demand at firm prices. Spiegel-eisen has advanced 2/ on good demand.

In the Steel trade there is a continuation of the previously reported large demand and prices are very firm all along the line. The greater activity is still in shipbuilding descriptions, but a marked increase in the demand for Rails has taken place the past week, and from some districts reports are received of good orders for Billets and Bars. A large increase is apparent in the production of Basic Steel, and, according to good authority, fully 30 % more is being turned out now than at the corresponding period last year. Prices are about 2/6 higher on Plates, Billets and Slabs.

The speculation in metals has been of moderate volume, and some evidences are visible of difficulty on the part of the "syndicate" in holding its grip. Tin seems to be under better control than is Copper. There are reports that the managing of the latter is causing the syndicate considerable trouble, but the statements in this connection are of a somewhat vague character.

At the meeting of the Tin Plate manufacturers, at Swansea, on Tuesday, an Executive Committee was appointed to regulate prices. It was proposed to fix minimum prices for the present at 12/, c.i.f. for Cokes. The demand the past week has been moderate, however, and transactions are reported at prices a trifle below those current a week ago.

It is reported that further large purchases of Old Iron Rails have been made for export to Italy, and that as high as 60/, f.o.b., was paid within the past week. The supply of desirable Wrought Scrap Iron is said to be moderate.

**Scotch Pig.**—There has been a fairly good business at somewhat irregular prices.

No. 1 Coltness, f.o.b. Glasgow, .....	53/
No. 1 Summerlee, ..	51/6
No. 1 Gartsherrie, ..	47/6
No. 1 Langloan, ..	51/
No. 1 Carnbroe, ..	45/6
No. 1 Shotts, .. at Leith, ..	49/6
No. 1 Glenarnock, .. Ardrossan, ..	48/6
No. 1 Dalmeilington, ..	45/6
No. 1 Eglinton, ..	45/

Steamer freights, Glasgow to New York, 7/6; Liverpool to New York, 7/6.

**Cleveland Pig.**—Prices are well maintained, although the demand is moderate. No. 1 Middlesboro', G. M. B., 35/6; No. 3 do., 33/, f.o.b.

**Bessemer Pig.**—There has been a good volume of business, but at irregular prices.

West Coast brands, mixed numbers, 45/ @ 46/, f.o.b.

**Spiegeleisen.**—Somewhat higher prices are quoted, with market steady and demand good. English 20 % quoted at 72/, f.o.b.

**Steel Rails.**—The market very firm, with demand fairly active. Standard sections, £4. 5/, f.o.b.

**Steel Blooms.**—Demand moderate, and prices unchanged. We quote at 75/ @ 77/6, f.o.b., for 7 x 7.

**Steel Billets and Slabs.**—There continues to be a good demand and prices are very firm. Bessemer 2½ x 2½ inch Billets, £4. 2/6, and Nail Slabs £4. 2/6, f.o.b.

**Steel Wire Rods.**—There has been more business and prices are very firm. Mild Steel, No. 6, quoted at £5. 17/6 @ £6, f.o.b.

**Old Rails.**—The market firm, with demand very fair. Tees quoted at £3 @ £3. 2/6, and Double Heads £3. 2/6 @ £3. 5/, c.i.f., New York.

**Scrap Iron.**—Supply moderate, and market firm, but quiet. Heavy Wrought at 50/ @ 52/6, f.o.b.

**Crop Ends.**—Moderate sales making at former prices. Bessemer quoted £2. 7/6 @ £2. 12/6, f.o.b.

**Tin Plate.**—The market has been quiet, with prices about steady. We quote, f.o.b. Liverpool:

IC Charcoal, Allaway grade, .....	17/	@	17/6
IC Bessemer steel, Coke finish, .....	14/9	@	15/
IC Siemens, ..	15/3	@	15/6
IC Coke, B. V. grade, ..	14/9	@	15/
IC Charcoal, Terne, Dean grade, ..	14/	@	14/6

**Manufactured Iron.**—There continues to be a good trade, with values firm. We quote, f.o.b. Liverpool:

Staff. Ord. Marked Bars, ..	7	10	0	@	7	12	6
Common, ..	5	00	0	@	5	2	6
Bl'k Sheet, singles, ..	6	12	6	@	6	15	0
Welsh Bars (at Wales), ..	4	12	6	@	4	15	0

**Tin.**—Market steady; fair demand. Straits closed at £167. 10/, spot, and £147. 10/, three months' futures.

**Copper.**—Steady market, with demand fair. Chili Bars closed at £85. 15/; Best Selected, £81.

**Lead.**—Dull market and prices rather weak. Soft Spanish, £15 @ £15. 2/6.

**Spelter.**—The market remains very firm, with demand good. Silesian, ordinary, £21 @ £21. 10/.

## Financial.

OFFICE OF THE IRON AGE.  
WEDNESDAY EVENING, JANUARY 11, 1888.

The volume of business as reported from all sections of the country shows a well sustained movement in legitimate branches as compared with the previous week. Advices received in Chicago from interior points are decidedly favorable, remittances on account of recent purchases of merchandise being in considerable amounts. Manufacturers of agricultural implements report that customers are paying up very satisfactorily. In New York City comparatively easy money decidedly helps the situation. The one dark cloud is caused by labor troubles in Pennsylvania, where the furnaces and rolling mills begin to feel the cessation of mining, which is now well nigh total throughout the Schuylkill as well as the Lehigh regions. At Reading and Pottsville several establishments have either closed or taken to the use of Bituminous coal, and at Philadelphia many large steamers laden with ore from the Mediterranean have had their destination changed to Baltimore. The Reading col-

liers, it is said, will also seek employment at Baltimore rather than Port Richmond. The Reading stockholders, at their annual meeting, on Monday, promptly tabled resolutions proposing arbitration through Mr. Childs, which action is construed as a *quasi* endorsement of President Corbin's policy of starting the collieries with non-union men or not at all. Meanwhile 50,000 men are idle—miners and railway employees.

The bank statement, covering a period of five days only, showed the large increase in surplus reserve of \$2,267,575, making that item now stand at \$10,826,725, against \$14,786,675 a year ago. In loans there was an expansion of \$3,530,500, while specie and legal tenders showed gains of \$4,096,100 and \$1,158,000 respectively. The extraordinary increase in deposits equal to \$11,946,100 is mainly accounted for by receipts of national bank notes from the interior in addition to the loans, there having been large return remittances from Texas and the Southwest. Money is easier, with an improving demand from mercantile borrowers. Commercial paper is also in better demand at 5½ @ 6 % for first class 60 @ 90 days. In Boston rates for money are still up nearly if not quite to 6½ %, and in Chicago 7 @ 8 %, but collections in the West have much improved and solicitude for the future has wholly disappeared. The new clearing house system through the Corn Exchange Bank, which has been adopted by the New York Produce Exchange, goes into operation January 16th. The specie exports from the port of New York during the week were \$368,000, and the imports \$62,000. For the corresponding week last year the imports exceeded \$2,000,000. The posted rates for bankers' sterling are \$4.85 for sixty-day and \$4.88 for sight. The market is quiet, but firm.

The Stock Exchange markets have been strong, but transactions generally are of a limited character. Strike rumors from the coal region have been the controlling factor. Opinion is shaping itself in expectation of a long struggle, the miners having distinctly declared that they would not work, even at the advanced wages, unless the coal is transported by union men. On Thursday and Friday the market was quiet but firm, with St. Paul and Reading the most active. Jersey Central stiffened upon announcement of the successful closing out of the syndicate which took \$30,000,000 of the new 5 % consolidated bonds. On Saturday Lackawanna gained strength from the fact that the Wyoming region remains unaffected by the Coal strike, and is the sole source of supply. On Monday the coal shares and grangers were still leading. On Tuesday there was a fall in Louisville and Nashville on the news that the directors proposed to increase the capital \$5,000,000. To-day was extremely dull.

United States bonds closed as follows:

U. S. 4½s, 1891, coupon, ..	108	@	109
U. S. 4s, 1937, coupon, ..	126	@	126¼
U. S. Currency 6s, 1893, ..	119	@	.....
U. S. Currency 6s, 1896, ..	131	@	.....
U. S. Currency 6s, 1897, ..	123	@	.....
U. S. Currency 6s, 1898, ..	125	@	.....
U. S. Currency 6s, 1899, ..	127	@	.....

Superintendent Willis S. Paine, of the State Banking Department, in his report to the Legislature at Albany, recommends the repeal or modification of the Saturday Half-Holiday law. He says that all banks, except some in New York, Brooklyn and Buffalo, are disregarding the law, and adds: "It is the prevailing opinion among New York City banks that the present law is antagonistic to the commercial interests of that city and the State as well. In the competition between the great cities of the East for trade, it is believed that it places the metropolis, the money center of the nation, at a disadvantage. "Unless the Saturday Half-Holiday



law is adopted throughout the several States of the Union it discriminates against industrial interests of those States by which it may be adopted. The position taken by Bank Superintendent Paine against the law is heartily approved by the New York bankers, and formal action by the Clearing House Association, demanding the law's repeal, is likely to be taken soon. The Superintendent's report shows that during the fiscal year the aggregate resources of the banks increased \$11,707,293; the increase in deposits for the same period was \$8,618,499; in loans and discounts, \$4,502,888, and in capital, \$1,235,000.

Touching monetary affairs in Congress, word comes from Washington that the Coinage Committee, with Mr. Bland at its head, will not do anything to discredit silver, and Mr. Bland intends to press the bill offered by him in the last Congress, to provide for the issue of coin certificates redeemable in gold or silver coin, at the option of the Government. The House Banking and Currency Committee on Tuesday reported favorably to the House a bill to authorize banks to issue circulation to the par value of bonds deposited. In the Senate Mr. Sherman has declared for similar legislation, and expects prompt favorable action by the Finance Committee. The Treasury Department reports that the actual money circulation of the country was expanded during December by \$15,581,723, mainly in silver certificates. The total circulation is stated at \$1,384,454,739 on January 1st, compared to \$1,317,826,052 on July 1st. The estimated amount of gold coin in circulation is \$397,600,000. During the past year the law has compelled the coinage of \$33,760,710 in silver, though in spite of all the efforts of the Department only \$3,349,409, less than \$1 in \$10, has gone into circulation. The bank circulation has decreased during the year \$40,110,382, so that, had there been no change in other kinds of money, the silver and silver certificates alone would have added to the circulation \$23,000,000 more than the decrease in bank notes, aside from a large increase in gold.

The clearings of 37 cities for the week ended January 7 show a decrease of 19.1%, compared with the corresponding week last year. Outside of New York a decrease of 2.8%. Compared with the last week in 1887 the clearings show an increase of \$193,353,612, and outside of New York \$92,706,889. For the week ended January 7 Boston reported an increase of 2.8%, and St. Joseph 26.7%. Philadelphia decreased 4.3%, Chicago 7.9%, San Francisco 13.8% and New York 26.8%. In Pittsburgh there was a slight increase.

Although general trade is quiet, prospects are generally considered good. Among other signs an improving demand for railroad bonds shows a growing confidence in the stability of values. Breadstuffs and corn have been more active, but lower. Wheat has a weaker tendency, on account of increased estimates by the Agricultural Department. The crop is now placed at 456,000,000 bushels. The foreign markets are still 2¢ @ 3¢ under the American market. Export business is slow. Cotton is easy on a light demand. Provisions are without special feature.

The imports of merchandise at this port last week were valued at \$7,806,000, as compared with \$8,598,000 for the corresponding week last year. The exports amounted to \$5,670,839, making the total since January 1, \$11,977,000, against \$13,123,000 for the same time last year.

President O. D. Baldwin, of the Fourth National Bank, in this city, resigned his position. Report says the reserve fund has been reduced beyond the legal limits, but the credit of the bank is said to be in no degree impaired. C. M. Bliss is president *pro tem*.

## NEW YORK.

**American Pig.**—The situation has undergone few changes, except that the Reading strike has developed a more serious aspect, and there is considerable talk of blowing out. Efforts are being made to secure coke to tide over urgent necessities, but it is evident that so long as the strike lasts the producers in the districts affected will move cautiously in the way of making sales for early or later delivery. Many consumers are apparently willing to take their chances, while others have been eager to obtain supplies for immediate use, and round figures have been paid. There can be little doubt that Southern furnaces have improved their opportunities, and have, on the whole, booked considerable business for the next four months, so far as Foundry Irons are concerned. Southern Mill has been offered in this market at \$16. For contracts for a few months hence \$20 on consumer's dock is asked for No. 1 Foundry by Virginia furnaces. We continue to quote: No. 1 Foundry, \$20.50 @ \$21.50; No. 2, \$19 @ \$19.50, and Gray Forge, \$16.50 @ \$16.75. We print elsewhere our monthly review and an estimate of 1887 output.

**Scotch Pig.**—Opinions differ on the question whether or not the scarcity of good No. 1 American Foundry has led to increased consumption of Scotch Iron. We quote Coltness, \$22 @ \$22.50; Dalmellington, \$20 @ \$20.50; Glengarnock, \$21 @ \$21.50; Summerlee, \$21.50 @ \$22; Clyde, \$20.50 @ \$21, and Eglinton, \$19.50 @ \$20.

**Structural Iron.**—There are no contracts of special magnitude on the market at the present time, and the mills in this vicinity are still well supplied with work. Bridge Plates, however, are weak, at 2.10¢ @ 2.20¢, Angles being quoted at 2.30¢ @ 2.40¢; Tees, 2.75¢ @ 2.80¢; and Beams and Channels, 3.3¢ base, on dock.

**Blooms, Slabs and Billets.**—There is nothing new to report in these departments. Trade in foreign material continues exceedingly dull and nominal; prices are unchanged.

**Wire Rods.**—There is but little business doing in Wire Rods, and prices are the same as a week ago—that is, \$40.50 @ \$41, according to time of delivery. We do not hear of any transactions in imported Rods, but the report is current that 1500 tons of domestic Rods were recently sold at a price that would net below \$40.50 at Baltimore.

**Steel Rails.**—The market is quiet and steady, with considerable business in sight and the majority of the mills firm, at \$32 at Eastern mills. We note sales in large blocks during the week, aggregating 25,000, taken by two Eastern works for the South and West. Mr. James M. Swank reports 1887 product at 2,049,638 gross tons.

**Old Rails.**—Reports concerning the market are very conflicting, according to the standpoint of seller or consumer. The former urge the following considerations: Stocks at tidewater are light, relatively speaking, and are controlled by strong parties, no inconsiderable part thereof being held in consignment. Prices here are below the parity of the foreign markets, the lowest c.i.f. figures being 69/ for Double Heads, which the majority quote 70/, the latter figure being equal to about \$24. It is stated that the stock of Doubles in England is so small and so strongly controlled that only a limited quantity could be bought at the price named, and that further orders would enhance the price. Large quantities of Old Rails have gone to Genoa, Italy, during the past few months. While there are no T's to speak of in England, the quantity available on the Continent is small. A round lot, about 600 tons, is now afloat from Sweden. All

these considerations, it is urged, warrant higher prices here, especially since the West seems to be practically bare of American Rails, according to special investigations made at the instance of two different houses here. It is not to be expected that any quantities of any consequence can be taken up until early summer, and, therefore, it is argued that the trade will be forced to look for a supply to the tide-water stocks. On January 1st, 1888, the stocks of Old Rails in bond here aggregated 16,781 gross tons, against 17,334 tons on the 1st of December, 1887. Those who reason that prices are bound to be higher between this time and spring insist that the low offers made repeatedly of late emanate from irresponsible parties, and that plump bids at higher prices for the Rails thus hawked about have failed to lead to business, showing that they were made for effect. On the other side of the question, it is urged that manufacturers of Track material, Bars, Shapes, &c., have little work on hand, that many of them have fair stocks of Old Rails, one of them having bought 6000 tons in October from a Southern road. The prices which manufacturers are getting for their goods do not warrant the advance, besides which the price of Muck Bars is so low that there is not much room for higher prices of Old Rails without leading to a restriction in the consumption of the latter. Consumers insist, too, that in spite of the bold front made by holders, the latter come down pretty quickly in their views when it comes to the point. It is hinted, and there seems to be some ground for the rumor, that efforts are being made to control the supply here, and it is certain that at least a few large consumers, notably in the West, are quietly trying to pick up Rails at a price. There are inquiries now in the market for close on to 5000 tons of Double Heads. In small lots there has been considerable business in a quiet way, among others a lot of 500 tons of Double Heads, and one lot of 300 tons of Tees; \$22 is asked for Tees, and \$23 for Double Heads, buyers, however, insisting that they can do considerably better.

**Track Materials.**—We note a sale during the week of one lot of 8000 kegs of Spikes to a railroad in this vicinity, and two contracts for at least 10,000 kegs each are now in the market. We quote \$2.20 @ \$2.25. A meeting of the association is to be held toward the close of this month. We quote Fish Plates 2¢ @ 2.10¢, and Bolts and Nuts 3.20¢ @ 3.25¢.

Messrs. Hogan & Burr, Iron commission merchants, at 45 Broadway, have just secured the exclusive agency for New York State for the sale of the Pig Iron product of the Briar Hill Iron and Coal Company, of Youngstown, Ohio.

The Blandon Rolling Mill Company, Limited, whose works are at Blandon, Berks County, Pa., have been reorganized as a limited liability company with H. Y. Kaufman, of Reading, as chairman, Frank L. Froment, of New York, as treasurer, and Wm. P. Tilton as secretary. The works, which manufacture Bars, Hoops, Bands, Grooved Skelp, Angles, Channels and Special Shapes, have been running full on double time. The New York office is at 112 John street.

## Metal Market.

**Copper.**—A cable message from Paris announced on Thursday of last week that the failure of M. Kaltenbach, an operator on the Stock Exchange there, caused considerable excitement. He had been a persistent bear in Rio Tinto Copper shares, and his liabilities were said to be 15,000,000 francs. This news was, of course, favorable to Copper, leading to transac-

tions at the Metal Exchange which reached 1,650,000 lb in futures at an advance of 15 @ 20 points over early sales. Spot sold at 16.25¢ @ 16.40¢; January at 16.40¢ @ 16.50¢; February at 16.55¢ @ 16.75¢; March at 16.65¢ @ 16.85¢, and April at 16.80¢. London was steady at £85. 10/ with sales of 550 tons, coming £85. 12/6 on Friday, with sales of 175 tons, while in this market there was less buoyancy, sales being limited to 225,000 lb January at 16.50¢ @ 16.60¢; 250,000 lb February at 16.75¢; 75,000 lb March at 16.85¢ @ 16.90¢, and 75,000 lb April at 16.95¢. There being no London quotation on Saturday hardly anything transpired in our own market, only some 50,000 lb spot being taken at 16.40¢. The week opened in London at the unaltered figure of £85. 12/6, sales there not exceeding 75 tons, while here speculation was also very moderate with but slight changes from last week. Sales were 50,000 lb spot at 16.40¢; 300,000 lb January at 16.45¢ @ 16.50¢; 150,000 lb March at 16.90¢ @ 17¢, and 100,000 lb April at 17¢. Yesterday London remained unaltered, £85. 12/6, with sales of 200 tons. It was cabled simultaneously thence that an agent of the French Copper ring had made his appearance in that city. He is reported to be trying to induce the Spanish Copper mining companies, the Rio Tinto, Tharsis and Marsh & Barry, to agree not to augment the output of Copper for four years. The syndicate would in return undertake to buy the produce of all the companies, guaranteeing that the price shall not go below a certain fixed minimum, say £60 per ton. It was added that the proposal was not likely to be accepted. The repetition of cable dispatches of the kind during the past fortnight shows anything but confidence in the maintenance of a high value; this seems to be the feeling here, and Copper was weaker, 125,000 lb, March, selling at 16½¢, and 50,000 lb, April, at 16.50¢ @ 16.55¢. There is no change in Copper in London to-day, remaining £85. 12/6, and we are quiet here at 16.35¢, spot. Best Selected has remained steady in London at £87. A dispatch was received from Detroit, dated 4th inst., to the effect that the Copper product of the Calumet and Hecla Mine for December was 1503 tons. For the year 1887, it was 31,373 tons, against 30,700 tons in 1886. Part of the mine was closed by fire from August 4 to September 12; again from November 20 to the present time. The Copper produced now is from the South Hecla location alone. The condition of the burning mine is as much an uncertainty now as ever, but it is entirely safe to predict that its output for the coming year cannot reach that of the past several years by many thousand tons. The Tamarack Mine produced 600 tons of mineral in December, the largest monthly output in its history, comparing with 535 tons in November and 501 in October. The total product of 1887 was 4872 tons of mineral, against 2473 tons in 1886. This product of 4872 tons equals about 3700 tons of Ingot Copper or 7,400,000 lb, the total cost to produce which and lay down in New York has not exceeded 6½¢ per lb. The total product since December 1, 1885, when operations began, has been 7466 tons of mineral and 5600 tons of Ingot Copper, equal to not far from 11,300,000 pounds. The aggregate output of mineral from seven leading Lake Superior Copper Mines in 1887 was 44,642 tons, equal to about 67,000,000 pounds of Ingot Copper, a decrease, as compared with 1886, of about 3,000,000 pounds. In this estimate the 1887 Calumet and Hecla output is placed as equal to about 42,000,000 pounds Fine, as against about 49,000,000 pounds Fine in 1886. The Boston and Montana Consolidated Copper and Silver Mining Company, an enterprise of the parties who own the Osceola and Tamarack mines, produced

2,139,000 pounds of Copper Matte, equal to 1,310,000 pounds of Fine Copper, from September 1 to December 21; the product of the third week in December was 270,000 pounds of Ingot Copper, or more than in the whole month of September, when work was begun. It is reported that the company sell their Matte in New York, largely for export, at a price which nets them fully 11½¢ per lb for Fine Copper in the present state of the Copper market. The Osceola Mine has stopped work for the present on its cross-cut on the Calumet and Hecla conglomerate on account of the richness of the amygdaloid workings in the main mine, on which the full force of workmen has been put.

At the Metal Exchange this forenoon 200,000 lb March brought 16½¢, and 100,000 lb April 16.65¢.

Mr. Jacob, agent of the Calumet and Hecla Mine in this city, informs us that advices about the fire are satisfactory, that the temperature is getting lower, and that there is no smoke.

**Tin.**—During the week under review Tin has elicited comparatively little interest at the Metal Exchange, holding its ground tolerably well on the whole, with but little doing, the quotation for spot remaining steady in London—£167, but futures declining gradually from £150 to £145, with sales of 500 tons, while here the closing quotation last night was 37.15¢, spot, and 34.95¢, March, 10 tons, January, selling at 36½¢. To-day London is unaltered, £167 and £145, and our own market quiet at 37¢, spot. As per cable message from Gilfillan, Wood & Co., Singapore, to Mr. Charles Nordhaus, East India agent, No. 89 Water street, New York, the December Tin shipments from the Straits Settlements to the United States were only 100 tons, against 1000 tons in 1886, and the total for the year 1887 4250 tons, against 4340 tons in 1886. To England the December shipments were 2500 tons, against 1000, and the year's shipments 17,250 tons, against 12,210 to both countries; taken together they were consequently 21,500 tons, against 16,550, an excess of 5000 tons, which is enormous. **Tin Plates.**—The spot demand so far in the new year does not come up to expectations, but there is some inquiry for Coke Tins to arrive. Meanwhile, prices remain steady and we quote large lines, ordinary brands, per box, as follows: Siemens-Martin Steel, Charcoal finish, \$5.25 @ \$5.37½; ditto Coke finish, \$5; Terns, \$4.50 @ \$4.75; and Coke Tins, \$4.85 @ \$4.90. Liverpool is steady at 15/3 Coke and 16/6 @ 17/ Charcoal.

**Lead.**—The "boom" that was expected did not come, and after a sale of 300 tons Common Domestic has been sold at \$4.80 in a small way, which is the quotation at the close. London has not varied from £15 Soft Spanish and £15. 15/ English Pig.

#### The 1887 Product of Colorado Smelters.

	Short tons.
Omaha and Grant	17,650
Holden Smelting Company	9,748
Pueblo Smelting and Refining Company	5,800
Colorado Smelting Company	8,068
Arkansas Valley Smelting Company	7,801
American Smelting Company	8,468
Harrison Smelting Company	5,428
Manville Smelting Company	2,600
La Plata Smelting Company	2,719
Golden Smelting Company	1,800
Tomichi Smelting Company	1,300
Royal George Smelter	700
Durango and Grand View, Rico	2,800
Total	75,482

With reference to the above table, *Mine, Slack and Rail*, of Denver, January 4, states: "The Lead product of Colorado smelters is 75,000 tons for 1887, about 3000 tons more than in 1886. It would have been exactly the same but for the arrival of the Aspen Ores on the Ore market November and December, causing the blowing-in of enough furnaces and the use of more Lead Ore to create the difference.

The total amount of Ore used by the smelters in 1887 was also larger than in 1886, but the precious metal value of Colorado Ores shows a decrease. There has been some Sulphide Ore shipped out of the State to Omaha, for instance; but the imports from other States and Territories have been smaller. Of the 17,600 tons Metallic Lead produced by the Omaha and Grant, over 5250 tons came from other States and Territories, and the Colorado Smelting Company drew over 3000 tons from similar sources, and the Pueblo Smelting Company and the Holden received enough from the same sections to warrant the estimate of 11,000 tons metal imported in Ore from the Territories and Old Mexico. We obtain thus as Lead product from Colorado mines the sum of 64,000 tons, being 4500 tons more than in 1886, when the imports into the State of Lead in Ore were considerably larger by not less than 3000 tons. It appears that the importations from the West and Northwest are decreasing, and those from the South are increasing. An estimate put forward makes the total Lead product of the United States last year 160,000 net tons, as against 135,629 net tons in 1886. This compilation shows on its face its utter untrustworthiness. Colorado is credited with 75,000 tons, which, as will be seen from the extract printed below, includes considerable Lead from Ores of other States, and from Mexico. Utah is given a total output of 24,000 tons, which includes over 7000 tons of Lead in Ores shipped out of the Territory, and partly, at least, smelted in Colorado. It needs only these indications to show that the estimate of 160,000 tons is utterly unreliable. At the Metal Exchange this forenoon 65,000, February and March, Lead were sold at 4.85¢. Lead Pipe, 7½¢; Sheet Lead, 8½¢; Tin lined Lead Pipe, 15¢; Block-Tin Pipe, 15¢; Drop Shot, per 25 lb bag, \$1.40; do., 5 lb bag, 35¢; Buck and Chilled, per 25 lb bag, \$1.75; and do., 5 lb, 40¢.

**Spelter and Zinc.**—A moderate trade has been transacted on the spot within the range of 5½¢ @ 5¼¢, Common Domestic Spelter, while Silesian, unaltered in London, at £21, remains nominally 6½¢ in our market. Sheet Zinc moves off satisfactorily at 6½¢ @ 7¢, Domestic.

**Antimony.**—Has not changed from £50 in London, and is taken in a jobbing way here at 11½¢ @ 11¼¢ Hallett, and 15¢ Cookson.

#### New York Metal Exchange.

The following sales are reported:

THURSDAY, January 5.	
50,000 lb Copper, spot	16¼¢
75,000 lb Copper, January	16.40¢
250,000 lb Copper, February	16.60¢
25,000 lb Copper, March	16.65¢
50,000 lb Copper, March	16.70¢
250,000 lb Copper, January	16¼¢
100,000 lb Copper, cash	16¼¢
25,000 lb Copper, March	16.65¢
50,000 lb Copper, February	16.55¢
25,000 lb Copper, February	16.60¢
10,000 lb Copper, spot	16.30¢
10 tons Tin, April	34½¢
10 tons Tin, April	34.30¢
100,000 lb Copper, February	16.65¢
50,000 lb Copper, March	16½¢
50,000 lb Copper, April	16.80¢
50,000 lb Copper, spot	16.40¢
100,000 lb Copper, March	16.80¢
100,000 lb Copper, January	16.85¢
50,000 lb Copper, February	16½¢
100,000 lb Copper, spot	16.40¢
FRIDAY, January 6.	
50,000 lb Copper, April	16.95¢
100,000 lb Copper, January	16.50¢
25,000 lb Copper, January	16.50¢
50,000 lb Copper, January	16.55¢
250,000 lb Copper, February	16.75¢
25,000 lb Copper, April	16.95¢
48 tons Spot Lead	4.90¢
20 tons Tin, February	36¢
50,000 lb Copper, January	16.55¢
25,000 lb Copper, January	16.60¢
25,000 lb Copper, March	16.90¢
25,000 lb Copper, March	16.85¢
25,000 lb Copper, March	16.90¢
100,000 lb Copper, March	16.95¢
SATURDAY, January 7.	
50,000 lb Copper, spot	16.40¢
MONDAY, January 9.	
100,000 lb Copper, March	17¢
100,000 lb Copper, April	17¢



50,000 lb Copper, spot.....	16.40¢
100,000 lb Copper, January.....	16.45¢
100,000 lb Copper, January.....	16.47¢
100,000 lb Copper, January.....	16.50¢
50,000 lb Copper, March.....	16.9¢

TUESDAY, January 10.

10 tons Tin, January.....	36.75¢
25,000 lb Copper, April.....	16.55¢
125,000 lb Copper, March.....	16.50¢
25,000 lb Copper, April.....	16.50¢
16 tons Lead, May.....	4.95¢

WEDNESDAY, January 11.

200,000 lb Lake Copper, March.....	16.50¢
125,000 lb Lake Copper, April.....	16.65¢
50,000 lb Lake Copper, March.....	16.60¢
25,000 lb Lake Copper, February.....	16.60¢
50,000 lb Lake Copper, spot.....	16.35¢
175,000 lb Lake Copper, March.....	16.70¢
25,000 lb Lake Copper, March.....	16.75¢
25,000 lb Lake Copper, May.....	16.25¢
50,000 lb Lake Copper, June.....	16.00¢
32,500 lb Lead, February.....	4.85¢
32,500 lb Lead, March.....	4.85¢

## Philadelphia.

Office of *The Iron Age*, 230 South Fourth St., PHILADELPHIA, Pa., January 10, 1888.

**Pig Iron.**—It is impossible to give any clear ideas in regard to the condition of the market, as there is no market as ordinarily understood. There is no great demand for Iron, but there is a still smaller supply, as very few makers care to offer anything while labor remains as unsettled as it is at present. The general opinion is, however, that prices are not going to be lower, no matter how the strike may end, and in that belief a good many stray lots were picked up, and as many orders placed for standard brands as makers were willing to accept. But the conditions are so peculiar and so exceptional that it is impossible to form any very decided opinion as to the outlook. For the present prices will undoubtedly be maintained, and possibly advanced fractionally, but that may be due to local influence, and indicate nothing as regards the general market. Still it is believed that a large volume of business will be done during the year upon which we have just entered, and at better prices than was expected a few weeks ago. This opinion is based on the fact that cost of production is being somewhat increased (as regards fuel) instead of decreased, and prospects are by no means favorable for a reversal of this order of things. If furnaces are to be kept in blast it seems like higher cost; if any considerable number "blow out," it means scarcity and higher prices, so that for awhile at least the chances of lower prices are pretty well exhausted. Ultimately, of course, the market will be ruled by outside influences. Lower prices for Finished Iron in the West or cheap Pig Iron from the South will fix values in this market, but for the present it is left pretty much to itself. An advance of \$1 per ton in Pig Iron, or \$2 in Finished Iron, might let in an avalanche of outside stuff, and soon make strikes of very little account so far as outsiders are concerned. The country is getting to be too big to be controlled in that way, so that while there may be some inconvenience temporarily, and locally, there is no reason to suppose that it will extend much further, either in its influence upon prices or in the curtailment of supplies. Prices to-day for such small lots as are available range from \$21 to \$21.50 at tide for No. 1 Foundry, \$19 for No. 2 and \$17 @ \$17.50 for Gray Forge. Supply small, demand about in proportion.

**Foreign Iron.**—Nothing doing, prices abroad being higher in proportion than in this market. Quotations are nominally \$20 @ \$20.50, c.i.f., duty paid, for Bessemer and \$27 @ \$27.50 for 20 % Spiegel.

**Blooms.**—Some inquiries are being made for sample lots of Steel Blooms and Billets, and a large business will be done if prices can be arranged satisfactorily. Foreign Steel is very low, however, and is competing sharply with the home product. Quotations are about as follows: \$29 @ \$30 for Nail Slabs; \$31.50 @ \$32.50 for

4 x 4 Billets; \$35 @ \$36 for Siemens-Martin. Domestic Blooms as follows: Steel, from \$30 to \$35, f.o.b. cars at mill, according to analysis; Charcoal Blooms, \$53 @ \$54; Runout Anthracite, \$45 @ \$46; Scrap Blooms, \$38 @ \$39 per "bloom" ton.

**Muck Bars.**—Market dull, although prices are pretty well maintained at from \$30 to \$30.50 at mill, according to location, &c.

**Bar Iron.**—There is not much demand, although the mills are tolerably well supplied with orders for prompt delivery. There has been some inquiry for quotations on large lots, but we cannot learn of any sales being made, although manufacturers are anxious for business if it can be had at about 1.95¢, which, however, is beyond buyer's ideas. As a matter of fact, neither side feel very confident of their position, and, while 1.85¢ is mentioned as the buyer's price, sellers feel somewhat diffident about shading 1.95¢ so long as there is so much uncertainty in regard to labor, fuel, &c. Meanwhile, small lots are taken at 1.95¢ @ 2¢, and probably about 1.9¢ for large lots from country mills. Skelp Iron is likely to be wanted in large quantities, but buyers seem afraid to bid over 1.85¢, while sellers are firm at 1.9¢. Prices will doubtless be controlled for the present by Pittsburgh, with the chances slightly in sellers' favor at this writing. Sales to-day at 1.9¢ for several hundred tons.

**Plate and Tank Iron.**—The demand has not assumed large proportions as yet, but the outlook is somewhat brighter than it was a few weeks ago. Quite a number of small orders have been placed, and most of the leading mills are fairly well employed, but only from day to day, as nothing large has been given out. There is a considerable demand for Steel Plates, but foreign stuff is offered at such low figures that business can only be had by shading prices nearly 1¢ per lb. There is a disposition to favor the home trade, however, so that some nice orders have been obtained for shipbuilding and similar purposes. Quotations are about as follows for ordinary sized lots: Ordinary plate, 2.15¢ @ 2.20¢; Tank, 2.20¢ @ 2.25¢; Shell, 2.6¢ @ 2.7¢; Flange, 3.5¢; Fire-Box, 4¢; Steel Plates, Tank and Ship Plate, 2.5¢ @ 2.6¢; Shell, 2.8¢; Flange, 3¢ @ 3½¢; Fire-Box, 3½¢ @ 4½¢.

**Structural Iron.**—A fair amount of new business has been entered and prospects are quite encouraging as regards the near future. Mills are nearly all busy, and prices are held with considerable firmness, considering the shrinkage in some other departments of the Finished Iron trade. Quotations are about as follows: 2.25¢ @ 2.35¢ for Bridge Plate; 2.3¢ @ 2.35¢ for Angles; 2.8¢ @ 2.9¢ for Tees and 3.3¢ for Beams and Channels.

**Sheet Iron.**—Business is as good as can be expected at this season, with a decided hardening in the prices of Galvanized Iron. An advance is likely to be established at an early date. Meanwhile quotations are about as follows:

Best Refined, Nos. 26, 27 and 28.....	3½¢
Best Refined, Nos. 18 to 25.....	3¼¢
Common, 4¢ less than the above.....	
Best Bloom Sheets, Nos. 26 to 28.....	4½¢ @ 4¾¢
Best Bloom Sheets, Nos. 22 to 25.....	4 @ 4¼¢
Best Bloom Sheets, Nos. 16 to 21.....	3½¢ @ 3¾¢
Blue Annealed.....	2½¢ @ 3¢
Best Bloom, Galvanized, discount.....	60¢
Common, discount.....	65¢

**Steel Rails.**—Large orders are still in abeyance, but manufacturers are as firm as ever in their efforts to maintain prices at \$32 as a minimum rate. There are a good many inquiries in the market, and some large orders would be placed at slight concessions from quoted rates. The conditions are such, however, that the manufacturers see no use in lowering their prices, as a great many Rails are sure to be wanted toward spring. Besides that, several leading mills are already shut

down, and it is no use starting unless fairly remunerative prices can be obtained. Sales during the week chiefly at \$32.50 at mills in Eastern Pennsylvania, or \$33 for small lots.

**Old Rails.**—There are indications of renewed interest in this department, although as yet buyers and sellers have not been able to reach an agreement as to prices. Holders ask \$22 @ \$22.50 for T's, and \$23.50 @ \$24 for Double Heads, with buyers at about a dollar less. Offerings light, and holders disposed to stand firm at the rates above named.

**Scrap Iron.**—With limited supplies and a good demand prices are firm at about the following quotations, say: Cargo lots No. 1 Scrap, \$21 @ \$21.50; carload lots, \$22 @ \$22.50, or for choice lots \$22.50 @ \$23. No. 2 do., \$14 @ \$15; Turnings, \$15 @ \$16; Old Car-Wheels, \$17.50 @ \$18; Old Steel Rails, \$20 @ \$21; Cast Scrap, \$16 @ \$17; do. Borings, \$11 @ \$12; Old Fish Plates, \$26 @ \$27.

**Wrought-Iron Pipe.**—The strike of the miners and handlers of Coal has caused an uneasy feeling among the Pipe mills. Prices are a trifle weak and to secure desirable orders concessions are made. Discounts are quoted as follows: Butt-Welded Black, 47½¢; Butt-Welded Galvanized, 37½¢; Lap-Welded Black, 60¢; Lap-Welded Galvanized, 45¢; Boiler Tubes, 52½¢.

**Nails.**—A somewhat improved feeling is noticeable. The volume of business is larger, and prices, while not quotably higher, are held with more firmness than for some time past. Lots from store bring from \$2.05 to \$2.15.

Edmund D. Smith, of Philadelphia, and W. G. Mendinhal, formerly of the Penn Iron Works, Lancaster, Pa., have formed a partnership as Iron Commission Merchants, and will have their offices at 222 and 224 South Third street, Philadelphia.

R. B. Wigton & Sons have removed to 228 South Fourth street, Philadelphia, where they have an excellent suite of offices, occupying the first floor. The rooms are finished in polished cherry, and the private office of the firm is divided from the main office by a very tasty stained glass partition, adding greatly to the artistic beauty of the rooms.

## Chicago.

Office of *The Iron Age*, 95 and 97 Washington St., CHICAGO, January 9, 1888.

**Pig Iron.**—The fact has at length become decidedly apparent to both sellers and buyers of Lake Superior Charcoal Iron that it will be in scant supply for the first six months of the year. The active demand of the past three weeks has done much to establish this condition of affairs, which is quite unexpected in many directions, although it had been anticipated in others. Buyers who had been deferring the placing of their orders in the expectation that prices would be lower now find that not only are prices higher than they were, but that certain brands which they preferred to use have been sold up and the furnaces making them are out of the market for the greater part of the year. In Coke Irons the situation is altogether different, the supply being abundant and prices barely sustained, except for special brands of American Scotch and Jackson County Softeners, for which the price has been kept up remarkably in view of the competition of other Irons of similar character. There has been no decline of consequence during the past week in Coke Irons, but this is principally because the furnace companies are not willing to take a loss on their products, especially those located in Ohio and Western Pennsylvania, whence freight rates to this point are high. Southern Iron is also less freely offered, so that

the competition from that quarter is not felt so severely as it was a short time since. Inquiries for Coke Irons indicate a good demand shortly and sellers are endeavoring to present a firm front until the movement begins. Quotations are now as follows, for cash, f.o.b. Chicago: Lake Superior Charcoal, Nos. 1, 2 and 3, \$22; Alabama Car-Wheel, \$26; Tennessee Car-Wheel, \$23.50; Southern Charcoal Foundry, \$21.50 @ \$22.50; Jackson County Softeners, No. 1, \$21; American Scotch, No. 1, \$20.50 @ \$21.50; Lake Superior Coke, all Ore, No. 1, \$20 @ \$21; No. 2, \$19 @ \$20; Cinder Mixed, 50¢ less; Coke Bessemer, run of furnace, \$20 @ \$21; Southern Coke, No. 2, \$19.50 @ \$19.75; No. 2½, \$19.

**Bar Iron.**—Sales have been light during the past week, but considerable business is in sight and mill agents are inclined to take a cheerful view of the situation. Competition from Birmingham, Ala., is springing up at Mississippi River points, quotations from that source being made at 1.60¢ mill, with 25¢ @ 27¢ @ 100 lbs named as prevailing freight rates. Common Iron is now quoted at 1.75¢ @ 1.80¢ in carload lots, f.o.b. Chicago, with half extras and often greater cuts on extras. There is a strong inclination toward a flat price as a basis of Bar Iron transactions. Good Muck Bar Iron is quoted at 1.90¢ @ 1.95¢, in carload lots, f.o.b. Chicago, with the same cutting on extras. Store prices are now 2¢ @ 2.20¢, according to quantity and quality.

**Structural Iron.**—Trade is very quiet at present. Carload lots, f.o.b. Chicago, are quoted as follows: Angles, 2.35¢ @ 2.40¢; Tees, 2.75¢; Universal Plates, 2.55¢ @ 2.60¢; Beams and Channels, 3.4¢. Store prices are ¼¢ @ ½¢ higher than these rates.

**Plates.**—It appears that, although reported on apparently good authority, the contract for Tank Steel for the new water-works tunnel has not yet been placed. From the character of the specifications it is unlikely to be taken at a very low price. A fair run of orders is reported by dealers, the new year having opened up very well. Store prices are quoted as follows: Heavy Sheets, Nos. 10 to 14, 2.80¢; Tank Iron, 2.75¢; Tank Steel, 3¢; Iron or Steel Shell, 3.25¢; Flange, 4.25¢; Fire-box, 4.75¢.

**Sheet Iron.**—Small lots have been sold during the week under review on a basis of 3.10¢, f.o.b. Chicago, for No. 27 Common Black. Stores are still quoting 3.50¢ for No. 27, with concessions of 10¢ @ 20¢ @ 100 lb, according to quantity.

**Galvanized Iron.**—A renewed demand is reported by mill representatives, who prefer to sell as little as possible at present prices, and are particularly disinclined to book orders for future delivery. The advance in Spelter and the persistency with which the advance is maintained cause the manufacturers to believe that they must soon mark up their rates on Galvanized Iron. Small lots are now held firmly at 60 % off on Juniata and 60 % and 5 % off on Charcoal.

**Merchant Steel.**—Nothing has occurred to change the even current of trade nor to affect the range of prices, which is as follows: Bessemer Bars, 2.35¢; Tool Steel, 8½¢ @ 9½¢; Specials, 13¢ @ 25¢; Crucible Spring, 4.25¢; Open-Hearth Spring, 3.30¢; Open-Hearth Machinery, 2.75¢ @ 3¢; Crucible Sheet Steel, 7¢ @ 11¢.

**Steel Rails.**—Small orders are beginning to make their appearance, probably 10,000 tons having been entered by the local manufacturers during the past week. They now quote \$35.

**Old Rails and Wheels.**—A few hundred tons of Old Iron Rails have recently changed hands at prices ranging from \$20.50 to \$22, and dealers are of the opinion that prices will be higher, but the

large consumers take a different view of the situation and are looking for a decline. Old Steel Rails are worth about \$18, taken as they run, with Frogs and Guards quoted at \$15. Old Car-Wheels are firm at \$21, but with only small sales reported.

**Scrap Iron.**—For Cast Scrap the demand is very good, while the supply is constantly dwindling, but other kinds of Scrap are moving slowly, Steel particularly being neglected. A few hundred tons of Forge were purchased by a consumer. We quote carefully Selected Scrap as follows, @ net ton of 2000 lb: Railroad Shop or No. 1 Forge, \$21; Railroad Track, \$19; Mill Iron or No. 1 Wrought, \$16; No. 2 Wrought, Tank, Flues, &c., \$14; Light Wrought, \$10.50 @ \$11; Machinery Cast, \$16; Stove Plate, \$11 @ \$11.50; Cast Borings, \$10.25; Wrought Turnings, \$12.75; Axle Turnings, \$14.50; Coil Steel, \$15; Leaf Steel, \$16; Locomotive Tires, \$16.50 @ \$17; Mixed Steel Scrap, \$12; Horseshoes, \$20 @ \$20.50; Axles, \$26. For Mixed Country Scrap quotations are \$13 @ \$14.

**Barb Wire.**—Manufacturers are gradually filling their order books for the remainder of this month and February, and some of them have advanced quotations for large lots to 3.15¢ for Painted, but others are still in the field at 3¢. Jobbers quote 3.25¢ for small lots, with concessions for quantity. Galvanized commands the usual ¼¢ advance on Painted.

**Nails.**—Manufacturers' sales of Cut Nails have been light in this immediate locality, but heavy orders have been taken in neighboring cities. Prices of Steel Nails are based on \$1.90 at Pittsburgh and \$1.95 at Wheeling. Freight rates are now 15¢, but manufacturers do not guarantee them. In Wire Nails manufacturers continue to do a fair trade at unchanged rates. Jobbers quote Steel Cut Nails in small lots at \$2.20 @ \$2.25 and Wire Nails at \$3, with the usual rebate for carloads.

**General Hardware.**—The wholesale trade is quiet at present, as stock-taking has just been completed, during which little was done to encourage new business. Traveling men are making their preparations for the year's work, however, and the machinery will soon be in motion again. Indications are regarded as very favorable for spring business, while the recollection of the very prosperous year which has just passed will be a stimulant to everybody concerned, causing them to put forth strong efforts to make the coming year at least equal it. Although no changes of the kind have recently been announced there is every expectation of higher prices on many kinds of goods. For Steel Goods, Nuts, Bolts and numerous other articles of Hardware there will be a demand that will soon change any little feeling of weakness to strength, especially if the initiative is taken by manufacturers, which is now being strongly intimated.

**Pig Lead.**—Trade has been very quiet recently, with quotations ranging from 4.85¢ to 4.95¢ for carload lots. Messrs. Everett & Post have compiled a table of monthly averages of Pig Lead prices in Chicago in 1887, as follows:

January.....	4.10 c.	July.....	4.42½¢
February.....	4.20 c.	August.....	4.53 c.
March.....	4.26 c.	September....	4.40 c.
April.....	4.11 c.	October.....	4.16 c.
May.....	4.25 c.	November.....	4.28 c.
June.....	4.53 c.	December....	4.87 c.

Average for the year 4.343c.

## Chattanooga.

Office of The Iron Age, Carter and Ninth Sts.,  
CHATTANOOGA, TENN., January 9, 1888.

The first week of the new year has opened under very favorable auspices in relation to business so far as can be ascertained. Manufacturers are receiving orders and inquiries that would indicate a con-

tinuation of the activity that has prevailed during the past year.

**Pig Iron.**—Owing to the complications existing in the East there is a decidedly improved feeling among our producers, and prices are having an upward feeling. It is thought by many that the time is not far distant when there will be a decided advance; for the present, however, there is no change to note in prices, although it would be difficult to place any large orders at the same figures that some sales have been made at not long since. Good Foundry grades are scarce and a number of furnaces are behind on orders of this quality—in fact, there is but a small portion of the product of any of the Southern furnaces that can be classed as strictly No. 1 Foundry. The furnaces turning out Car-Wheel Iron are meeting with ready sales for their grades of 2, 3, 4 and 5, at full prices. The Round Mountain Furnace, at Round Mountain, Ala., recently went out of blast for the purpose of relining, which will be completed in March and will then blow in again on Cold-Blast Charcoal for Car-Wheel Iron. This Iron is one of the strongest and best adapted for Car-Wheels of any Iron made in the United States. During the late war the Iron made from this furnace entered largely into the manufacture of heavy ordnance at the confederate arsenal at Selma. It is now known as the Elliott Iron Works.

## Cleveland.

CLEVELAND, January 9, 1888.

**Iron Ore.**—The unsold Ore on the docks is being disposed of rapidly. The inquiry is chiefly for non-Bessemer, and 5500 tons of Red Hematite of this grade sold during the week for \$5. About 1200 tons of Bessemer Hematite Ore sold for \$5.75. A few thousand tons of No. 1 Specular, non-Bessemer, brought \$6. About 20,000 tons of Ore have been sent forward to the furnaces during the past six days. There is less complaint of a scarcity of cars, and mid-winter contracts are being quickly filled. Small lots of Ore are coming down by rail, the cost of transportation differing but slightly from the vessel rates prevailing all summer. The mine owners and Ore dealers seem fully determined to stand together for lower lake freights. More than two-thirds of all the Ore shipped from the Lake Superior region is purchased through Cleveland agents. The latter announce themselves opposed to selling a single ton of Ore until the freight charges have been agreed upon. The furnacemen are with them in this determination. If the vessel owners do not modify their demands they will bring very little Ore down the lakes next season. The Ore dealers ask for options on which to base conditional sales or else for charters permitting liberal concessions to furnacemen. Last year three-fourths of all the Ore sold during the season was disposed of before the question of freights was settled. As a result the vesselmen fixed their own transportation rates. The Ore dealers were forced to submit or break their contracts. The stand of the dealers against a repetition of this extortion is delaying negotiations for the coming season. By this time last year fully 1,000,000 tons of Ore had been sold for mid-summer delivery. Up to the present time not a ton of Ore has been sold that is not already on the docks.

**Pig Iron.**—The market has exhibited unusual life during the past ten days. Furnacemen and iron dealers anticipate a lively trade during the balance of the winter. Cars have been less difficult to obtain than in December, and contracts have been promptly filled. Soft Foundry Irons are in excellent demand. About 2000 tons of this grade of Iron sold for \$19 @ \$20, cash, at the furnace. A smaller lot of No. 1 Gray Forge, Red Short, brought \$20.85. Sales of Mill Iron for puddling work are



reported at \$16.50 at the furnace. The tendency is certainly toward firmer prices and more liberal orders. Lake Superior Charcoal, all numbers, is quoted at \$23 @ \$24; No. 1 Bessemer at \$21.85; No. 1 Foundry, all lake Ores, \$21.35 @ \$21.85; No. 2 Foundry, all lake Ores, \$20.35 @ \$20.85; No. 1 Silvery, native Ohio Ores, \$21 @ \$21.50; No. 1 Gray Forge, Red Short, \$20.35 @ 20.85; No. 1 Gray Forge, neutral, \$18.85 @ \$19.35; No. 1, American Scotch, Blackband, \$21.50; No. 2, American Scotch, Blackband, \$20.50.

**Manufactured Iron.**—Inquiries are scarce and prices are weak. Quotations for Bar Iron are again down to \$1.75, with but few sales reported. Sheet Iron is also in less demand than during December. No. 24 is quoted at \$2.80 and other sizes on that basis.

**Old Rails.**—There is a very light demand, the only sale reported being a small lot of Old Americans at \$23. Old Wheels are also weak, \$20 being a purely nominal quotation.

**Barb Wire.**—Manufacturers report the market dull, and quote Galvanized at \$3.75 and Painted at \$3.10, f.o.b. cars, at mill.

The Cleveland Barb Fence Company have moved into the new and commodious works, 39 and 41 Center street.

The Perkins Lock Company, of Cleveland, have been offered two acres of land in this city gratis if they will locate their works here.

The firm of Schwarzenberg, Hays & Co., dealers in Iron and Steel Scrap, have dissolved partnership. Schwarzenberg Bros. & Co. will continue in business at 101 to 105 Scranton avenue, Mr. Joseph Hays engaging in a similar business at 166 to 180 Scranton avenue.

The Cleveland Machinery Company is the new title of the firm formerly known as the Cleveland Machine Company, 155 Leonard street.

Mr. Joseph Hays will engage in business as dealer in Iron and Steel Scrap, under the firm name of Joseph Hays & Co., with yards at No. 166 to 180 Scranton avenue, where he has railroad facilities for handling all kinds of materials.

Messrs. H. L. and E. A. Schwarzenberg will open yards at 101 to 105 Scranton avenue, under the firm name of Schwarzenberg Bros. & Co.

## Pittsburgh.

Office of *The Iron Age*, 77 Fourth avenue, 1  
PITTSBURGH, PA., January 10, 1888.

There has been no important change in the position of the general Iron market during the past week. January, particularly the first half, is nearly always a dull month, and the present one is not likely to be an exception. However, the outlook, as noted in our report of last week, is by no means discouraging. Well-posted brokers who give the business close attention are of the opinion that the present year will be fully equal to 1887, notwithstanding there is a Presidential campaign this year, which is regarded as being unfavorable to general business. The most important event of the week was the full resumption of river navigation and the shipment of some additional 6,000,000 bushels of Coal to down-river markets. The price of Coal at Cincinnati has already dropped, 6¢ @ 7¢ per bushel, and is likely to drop still more. The mills, blast furnaces, foundries, &c., dependent upon Pittsburgh for supplies will be greatly benefited by the decline.

**Pig Iron.**—The market, so far as Pittsburgh is concerned, continues in an exceedingly unsatisfactory condition for the producer, who, in the present condition of affairs, is unable to more than realize a new dollar for an old one. It is very generally admitted that ruling prices do not more than cover actual cost of production, the recent reduction in the price of Coke taken into consideration, and it is not strange, therefore, that furnacemen are refusing to contract for future delivery at the prices prevailing. There is but little Iron offering here from a distance. Southern Iron will not be sold here at present in competition with home Irons, as the latter are cheaper than the former could be laid down here at. As compared with those of a week ago there has been no change in prices, which we quote as follows:

Neutral Gray Forge.....	\$16.50 @ \$17.00	4 mos.
All Ore Mill.....	18.00 @ 18.50	"
No. 1 Foundry.....	19.00 @ 19.50	"
No. 2 Foundry.....	18.00 @ 18.50	"
No. 1 All-Ore Foundry.....	19.50 @ 20.00	"
White and Mottled.....	15.50 @ 16.00	"
Charcoal Foundry.....	22.00 @ 25.00	"
Cold Blast Charcoal.....	27.00 @ 30.00	"
Bessemer Iron.....	18.50 @ 19.00	"

For No. 1 Neutral Gray Forge Iron there are but few, if any, sellers below \$16.50, cash, and for standard brands of Bessemer, so far as we are advised, there are no sellers under \$19.00, four months.

**Muck Bar.**—The demand continues light, but prices remain unchanged, \$29 @ \$29.50, cash, as to quality, delivery, &c. So far as we are advised there have been no sales below \$29, cash. Trade is likely to continue light at present.

**Manufactured Iron.**—There is no improvement in demand, nor is it likely that there will be until the spring trade opens up. Some of the mills are reasonably well employed, while with others it is different. The outlook is by no means discouraging, and there is not much doubt but what the mills generally will be pretty well employed within a few weeks. Prices remain unchanged, and we continue to quote upon a basis of 1.85¢ @ 1.90¢ for Bars, 60 days, 2 % off for cash.

**Nails.**—There has been some inquiry during the past week; we hear of an order for 5000 kegs, which could probably have been secured by making a slight concession from present prices, but this manufacturers are refusing to do. We continue to quote at \$1.90, 60 days, 2 % off for cash. A meeting of the Western Nail Association has been called to take place at Wheeling to-morrow, which will be the first for several months. It is not likely that any change will be made in prices.

**Wrought-Iron Pipe.**—The demand continues light, as it nearly always is at this season of the year, and there is not likely to be any change for the better until the spring trade opens up. No change in prices. Discount on Black Butt-Welded Pipe, 47½ %; on Galvanized do., 37½ %; on Black Lap-Welded do., 60 %; on Galvanized do., 37½ %; Boiler Tubes 52½ % off; Casing, all sizes, 50 % off; 2-inch Tubing 14¢ per foot, net; 2-inch Line Pipe, 13¢; 8-inch Line Pipe \$1.40.

**Billets, &c.**—The market for Bessemer Steel Billets continues fairly active, a number of good-sized sales having been made recently, and all at \$29, cash. So far as we are advised, there has not been a single sale below \$29, cash, and we doubt whether a seller could be found here under this price. Foreign Billets have been shut out of this market for several months. Steel Nail Slabs quoted steady at \$29, cash, but the demand is light. Small sales of Bloom Ends at \$19 @ \$19.25 and Rail Ends at \$19.50, cash. Wire Rods (American) are quoted at \$41.

**Steel Rails.**—Heavy sections are still quoted at \$33, cash, on cars here for winter or spring delivery, but buyers, it appears, can do better elsewhere. An order on this

market a couple of weeks ago, and for which the price in question was demanded, was placed at Chicago, and, it is believed, for less money.

**Old Rails.**—The market here continues dull, and, in the absence of sales, it is difficult to give reliable quotations. A few days ago a broker reported having an order for 2000 tons of Tees at \$23, delivered in Pittsburgh, but he could there find no seller at that price. Consumers have been buying very sparingly for some time past, and it is evident are low in stock, and once the market begins to show signs of hardening an improved demand is almost certain to follow.

**Railway Track Supplies.**—Trade continues quiet, but will soon, no doubt, begin to show signs of improvement. Prices remain unchanged: Spikes, 2.60¢, 30 days, delivered; Splice Bars, 2¢ @ 2.10¢; Muck Bolts, 3¢, with Square and 3.10¢ with Hexagon Nuts.

**Old Material.**—The demand for all kinds of Old Material continues light, while prices remain unchanged. No. 1 Wrought Scrap, \$20, net ton; Wrought Turnings, \$14 @ \$15; Car Axles, \$26 @ \$27; Cast Scrap, \$16.50 @ \$17; Gross Cast Borings, \$12 @ \$13; Old Car-Wheels nominal at \$19.50 @ \$20.

## Cincinnati.

Office of *The Iron Age*, Fourth and Main Sts., 1  
CINCINNATI, January 9, 1888.

Word comes from the North that a better and firmer feeling prevails throughout business circles interested in Pig Iron, and from this the conclusion is drawn that an advance is imminent. This may be so, but the actual and rumored transactions do not bear out the inference. The week under review has been more active and the urgent inquiry has been transferred from Foundry to Mill Iron. The volume of business accomplished does not represent the extent of the demand. But while the wants of consumers are large, the offerings are ample and the competition active, which last factor alone is a potent one at present, as may be gathered from a history of the various transactions. There have been a number of small sales of Mixed Silvery, Bright and No. 2 and No. 2½ and No. 3 Mill Iron by Cincinnati agents during the week, which in the aggregate may be approximately estimated at about 10,000 tons. In addition, 1000 tons Southern Car-Wheel Iron is reported at \$23.50, cash, here; 3800 tons Mixed Jackson County and Southern Iron; 12,000 tons Hanging Rock Coke Iron; 500 tons Lake Superior Charcoal at \$22.50, cash; 1500 tons No. 2 Foundry Iron at \$18.50, cash; No. 2 Foundry is also rumored to have been sold at \$18.25; No. 2 Mill Iron at \$15.75; and No. 1 do. at \$17.25, cash, or equivalent to such rate here. Louisville is said to have secured another sale of 12,000 tons Southern Iron for delivery during the next nine months, Cincinnati parties being interested in the sale.

### Hot-Blast Foundry.

Ohio Southern Coke, No. 1.....	\$20.00 @ \$20.50
Ohio Southern Coke, No. 2.....	18.50 @ 19.00
Ohio Southern Coke, No. 2½.....	18.00 @ 18.50
Ohio Soft Stone Coal, No. 1.....	20.00 @ 20.50
Ohio Soft Stone Coal, No. 2.....	18.50 @ 19.50
Mahoning Valley.....	20.50 @ 21.00
Hanging Rock, Charcoal, No. 1.....	22.00 @ 24.00
Hanging Rock Charcoal, No. 2.....	22.00 @ 23.00
Tennessee and Alabama, No. 1.....	21.00 @ 21.50
Tennessee and Alabama, No. 2.....	19.50 @ 20.50

### Forge.

Strong Neutral Coke.....	17.00 @ 17.50
Mottled Neutral Coke.....	15.50 @ 16.00
Cold Short.....	16.00 @ 17.00

### Car-Wheel and Malleable Irons.

Southern Car-Wheel.....	23.00 @ 24.00
Hanging Rock, Cold Blast.....	24.00 @ 25.00
Lake Superior Car-Wheel Malleable.....	22.50 @ 23.00

**Manufactured Iron.**—There has been little doing recently; only one local mill has yet resumed, but several loads of Coal are now on their way to Cincinnati, the first fleet having already arrived, and a

the competition from that quarter is not felt so severely as it was a short time since. Inquiries for Coke Irons indicate a good demand shortly and sellers are endeavoring to present a firm front until the movement begins. Quotations are now as follows, for cash, f.o.b. Chicago: Lake Superior Charcoal, Nos. 1, 2 and 3, \$22; Alabama Car-Wheel, \$26; Tennessee Car-Wheel, \$23.50; Southern Charcoal Foundry, \$21.50 @ \$22.50; Jackson County Softeners, No. 1, \$21; American Scotch, No. 1, \$20.50 @ \$21.50; Lake Superior Coke, all Ore, No. 1, \$20 @ \$21; No. 2, \$19 @ \$20; Cinder Mixed, 50¢ less; Coke Bessemer, run of furnace, \$20 @ \$21; Southern Coke, No. 2, \$19.50 @ \$19.75; No. 2½, \$19.

**Bar Iron.**—Sales have been light during the past week, but considerable business is in sight and mill agents are inclined to take a cheerful view of the situation. Competition from Birmingham, Ala., is springing up at Mississippi River points, quotations from that source being made at 1.60¢ mill, with 25¢ @ 27¢ @ 100 lbs named as prevailing freight rates. Common Iron is now quoted at 1.75¢ @ 1.80¢ in carload lots, f.o.b. Chicago, with half extras and often greater cuts on extras. There is a strong inclination toward a flat price as a basis of Bar Iron transactions. Good Muck Bar Iron is quoted at 1.90¢ @ 1.95¢, in carload lots, f.o.b. Chicago, with the same cutting on extras. Store prices are now 2¢ @ 2.20¢, according to quantity and quality.

**Structural Iron.**—Trade is very quiet at present. Carload lots, f.o.b. Chicago, are quoted as follows: Angles, 2.35¢ @ 2.40¢; Tees, 2.75¢; Universal Plates, 2.55¢ @ 2.60¢; Beams and Channels, 3.4¢. Store prices are ¼¢ @ ½¢ higher than these rates.

**Plates.**—It appears that, although reported on apparently good authority, the contract for Tank Steel for the new water-works tunnel has not yet been placed. From the character of the specifications it is unlikely to be taken at a very low price. A fair run of orders is reported by dealers, the new year having opened up very well. Store prices are quoted as follows: Heavy Sheets, Nos. 10 to 14, 2.80¢; Tank Iron, 2.75¢; Tank Steel, 3¢; Iron or Steel Shell, 2.25¢; Flange, 4.25¢; Fire-box, 4.75¢.

**Sheet Iron.**—Small lots have been sold during the week under review on a basis of 3.10¢, f.o.b. Chicago, for No. 27 Common Black. Stores are still quoting 3.50¢ for No. 27, with concessions of 10¢ @ 20¢ @ 100 lb, according to quantity.

**Galvanized Iron.**—A renewed demand is reported by mill representatives, who prefer to sell as little as possible at present prices, and are particularly disinclined to book orders for future delivery. The advance in Spelter and the persistency with which the advance is maintained cause the manufacturers to believe that they must soon mark up their rates on Galvanized Iron. Small lots are now held firmly at 60 % off on Juniata and 60 % and 5 % off on Charcoal.

**Merchant Steel.**—Nothing has occurred to change the even current of trade nor to affect the range of prices, which is as follows: Bessemer Bars, 2.35¢; Tool Steel, 8½¢ @ 9½¢; Specials, 13¢ @ 25¢; Crucible Spring, 4.25¢; Open-Hearth Spring, 3.30¢; Open-Hearth Machinery, 2.75¢ @ 3¢; Crucible Sheet Steel, 7¢ @ 11¢.

**Steel Rails.**—Small orders are beginning to make their appearance, probably 10,000 tons having been entered by the local manufacturers during the past week. They now quote \$35.

**Old Rails and Wheels.**—A few hundred tons of Old Iron Rails have recently changed hands at prices ranging from \$20.50 to \$22, and dealers are of the opinion that prices will be higher, but the

large consumers take a different view of the situation and are looking for a decline. Old Steel Rails are worth about \$18, taken as they run, with Frogs and Guards quoted at \$15. Old Car-Wheels are firm at \$21, but with only small sales reported.

**Scrap Iron.**—For Cast Scrap the demand is very good, while the supply is constantly dwindling, but other kinds of Scrap are moving slowly, Steel particularly being neglected. A few hundred tons of Forge were purchased by a consumer. We quote carefully Selected Scrap as follows, @ net ton of 2000 lb: Railroad Shop or No. 1 Forge, \$21; Railroad Track, \$19; Mill Iron or No. 1 Wrought, \$16; No. 2 Wrought, Tank, Flues, &c., \$14; Light Wrought, \$10.50 @ \$11; Machinery Cast, \$16; Stove Plate, \$11 @ \$11.50; Cast Borings, \$10.25; Wrought Turnings, \$12.75; Axle Turnings, \$14.50; Coil Steel, \$15; Leaf Steel, \$16; Locomotive Tires, \$16.50 @ \$17; Mixed Steel Scrap, \$12; Horseshoes, \$20 @ \$20.50; Axles, \$26. For Mixed Country Scrap quotations are \$13 @ \$14.

**Barb Wire.**—Manufacturers are gradually filling their order books for the remainder of this month and February, and some of them have advanced quotations for large lots to 3.15¢ for Painted, but others are still in the field at 3¢. Jobbers quote 3.25¢ for small lots, with concessions for quantity. Galvanized commands the usual ¼¢ advance on Painted.

**Nails.**—Manufacturers' sales of Cut Nails have been light in this immediate locality, but heavy orders have been taken in neighboring cities. Prices of Steel Nails are based on \$1.90 at Pittsburgh and \$1.95 at Wheeling. Freight rates are now 15¢, but manufacturers do not guarantee them. In Wire Nails manufacturers continue to do a fair trade at unchanged rates. Jobbers quote Steel Cut Nails in small lots at \$2.20 @ \$2.25 and Wire Nails at \$3, with the usual rebate for carloads.

**General Hardware.**—The wholesale trade is quiet at present, as stock-taking has just been completed, during which little was done to encourage new business. Traveling men are making their preparations for the year's work, however, and the machinery will soon be in motion again. Indications are regarded as very favorable for spring business, while the recollection of the very prosperous year which has just passed will be a stimulant to everybody concerned, causing them to put forth strong efforts to make the coming year at least equal it. Although no changes of the kind have recently been announced there is every expectation of higher prices on many kinds of goods. For Steel Goods, Nuts, Bolts and numerous other articles of Hardware there will be a demand that will soon change any little feeling of weakness to strength, especially if the initiative is taken by manufacturers, which is now being strongly intimated.

**Pig Lead.**—Trade has been very quiet recently, with quotations ranging from 4.85¢ to 4.95¢ for carload lots. Messrs. Everett & Post have compiled a table of monthly averages of Pig Lead prices in Chicago in 1887, as follows:

January.....	4.10 c.	July.....	4.42½¢
February.....	4.20 c.	August.....	4.53 c.
March.....	4.26 c.	September....	4.40 c.
April.....	4.11 c.	October.....	4.16 c.
May.....	4.25 c.	November....	4.28 c.
June.....	4.53 c.	December.....	4.87 c.

Average for the year 4.343c.

## Chattanooga.

Office of The Iron Age, Carter and Ninth Sts.,  
CHATTANOOGA, TENN., January 9, 1888.

The first week of the new year has opened under very favorable auspices in relation to business so far as can be ascertained. Manufacturers are receiving orders and inquiries that would indicate a con-

tinuation of the activity that has prevailed during the past year.

**Pig Iron.**—Owing to the complications existing in the East there is a decidedly improved feeling among our producers, and prices are having an upward feeling. It is thought by many that the time is not far distant when there will be a decided advance; for the present, however, there is no change to note in prices, although it would be difficult to place any large orders at the same figures that some sales have been made at not long since. Good Foundry grades are scarce and a number of furnaces are behind on orders of this quality—in fact, there is but a small portion of the product of any of the Southern furnaces that can be classed as strictly No. 1 Foundry. The furnaces turning out Car-Wheel Iron are meeting with ready sales for their grades of 2, 3, 4 and 5, at full prices. The Round Mountain Furnace, at Round Mountain, Ala., recently went out of blast for the purpose of relining, which will be completed in March and will then blow in again on Cold-Blast Charcoal for Car-Wheel Iron. This Iron is one of the strongest and best adapted for Car-Wheels of any Iron made in the United States. During the late war the Iron made from this furnace entered largely into the manufacture of heavy ordnance at the confederate arsenal at Selma. It is now known as the Elliott Iron Works.

## Cleveland.

CLEVELAND, January 9, 1888.

**Iron Ore.**—The unsold Ore on the docks is being disposed of rapidly. The inquiry is chiefly for non-Bessemer, and 5500 tons of Red Hematite of this grade sold during the week for \$5. About 1200 tons of Bessemer Hematite Ore sold for \$5.75. A few thousand tons of No. 1 Specular, non-Bessemer, brought \$6. About 20,000 tons of Ore have been sent forward to the furnaces during the past six days. There is less complaint of a scarcity of cars, and mid-winter contracts are being quickly filled. Small lots of Ore are coming down by rail, the cost of transportation differing but slightly from the vessel rates prevailing all summer. The mine owners and Ore dealers seem fully determined to stand together for lower lake freights. More than two-thirds of all the Ore shipped from the Lake Superior region is purchased through Cleveland agents. The latter announce themselves opposed to selling a single ton of Ore until the freight charges have been agreed upon. The furnacemen are with them in this determination. If the vessel owners do not modify their demands they will bring very little Ore down the lakes next season. The Ore dealers ask for options on which to base conditional sales or else for charters permitting liberal concessions to furnacemen. Last year three-fourths of all the Ore sold during the season was disposed of before the question of freights was settled. As a result the vesselmen fixed their own transportation rates. The Ore dealers were forced to submit or break their contracts. The stand of the dealers against a repetition of this extortion is delaying negotiations for the coming season. By this time last year fully 1,000,000 tons of Ore had been sold for mid-summer delivery. Up to the present time not a ton of Ore has been sold that is not already on the docks.

**Pig Iron.**—The market has exhibited unusual life during the past ten days. Furnacemen and iron dealers anticipate a lively trade during the balance of the winter. Cars have been less difficult to obtain than in December, and contracts have been promptly filled. Soft Foundry Irons are in excellent demand. About 2000 tons of this grade of Iron sold for \$19 @ \$20, cash, at the furnace. A smaller lot of No. 1 Gray Forge, Red Short, brought \$20.85. Sales of Mill Iron for puddling work are



reported at \$16.50 at the furnace. The tendency is certainly toward firmer prices and more liberal orders. Lake Superior Charcoal, all numbers, is quoted at \$23 @ \$24; No. 1 Bessemer at \$21.85; No. 1 Foundry, all lake Ores, \$21.35 @ \$21.85; No. 2 Foundry, all lake Ores, \$20.35 @ \$20.85; No. 1 Silvery, native Ohio Ores, \$21 @ \$21.50; No. 1 Gray Forge, Red Short, \$20.35 @ 20.85; No. 1 Gray Forge, neutral, \$18.85 @ \$19.35; No. 1, American Scotch, Blackband, \$21.50; No. 2, American Scotch, Blackband, \$20.50.

**Manufactured Iron.**—Inquiries are scarce and prices are weak. Quotations for Bar Iron are again down to \$1.75, with but few sales reported. Sheet Iron is also in less demand than during December. No. 24 is quoted at \$2.80 and other sizes on that basis.

**Old Rails.**—There is a very light demand, the only sale reported being a small lot of Old Americans at \$23. Old Wheels are also weak, \$20 being a purely nominal quotation.

**Barb Wire.**—Manufacturers report the market dull, and quote Galvanized at \$3.75 and Painted at \$3.10, f.o.b. cars, at mill.

The Cleveland Barb Fence Company have moved into the new and commodious works, 39 and 41 Center street.

The Perkins Lock Company, of Cleveland, have been offered two acres of land in this city gratis if they will locate their works here.

The firm of Schwarzenberg, Hays & Co., dealers in Iron and Steel Scrap, have dissolved partnership. Schwarzenberg Bros. & Co. will continue in business at 101 to 105 Scranton avenue, Mr. Joseph Hays engaging in a similar business at 166 to 180 Scranton avenue.

The Cleveland Machinery Company is the new title of the firm formerly known as the Cleveland Machine Company, 155 Leonard street.

Mr. Joseph Hays will engage in business as dealer in Iron and Steel Scrap, under the firm name of Joseph Hays & Co., with yards at No. 166 to 180 Scranton avenue, where he has railroad facilities for handling all kinds of materials.

Messrs. H. L. and E. A. Schwarzenberg will open yards at 101 to 105 Scranton avenue, under the firm name of Schwarzenberg Bros. & Co.

## Pittsburgh.

Office of *The Iron Age*, 77 Fourth avenue, 1  
PITTSBURGH, PA., January 10, 1888.

There has been no important change in the position of the general Iron market during the past week. January, particularly the first half, is nearly always a dull month, and the present one is not likely to be an exception. However, the outlook, as noted in our report of last week, is by no means discouraging. Well-posted brokers who give the business close attention are of the opinion that the present year will be fully equal to 1887, notwithstanding there is a Presidential campaign this year, which is regarded as being unfavorable to general business. The most important event of the week was the full resumption of river navigation and the shipment of some additional 6,000,000 bushels of Coal to down-river markets. The price of Coal at Cincinnati has already dropped 6¢ @ 7¢ per bushel, and is likely to drop still more. The mills, blast furnaces, foundries, &c., dependent upon Pittsburgh for supplies will be greatly benefited by the decline.

**Pig Iron.**—The market, so far as Pittsburgh is concerned, continues in an exceedingly unsatisfactory condition for the producer, who, in the present condition of affairs, is unable to more than realize a new dollar for an old one. It is very generally admitted that ruling prices do not more than cover actual cost of production, the recent reduction in the price of Coke taken into consideration, and it is not strange, therefore, that furnacemen are refusing to contract for future delivery at the prices prevailing. There is but little Iron offering here from a distance. Southern Iron will not be sold here at present in competition with home Irons, as the latter are cheaper than the former could be laid down here at. As compared with those of a week ago there has been no change in prices, which we quote as follows:

Neutral Gray Forge.....	\$16.50 @	\$17.00 4 mos.
All Ore Mill.....	18.00 @	18.50 "
No. 1 Foundry.....	19.00 @	19.50 "
No. 2 Foundry.....	18.00 @	18.50 "
No. 1 All-Ore Foundry.....	19.50 @	20.00 "
White and Mottled.....	15.50 @	16.00 "
Charcoal Foundry.....	22.00 @	25.00 "
Cold Blast Charcoal.....	27.00 @	30.00 "
Bessemer Iron.....	18.50 @	19.00 "

For No. 1 Neutral Gray Forge Iron there are but few, if any, sellers below \$16.50, cash, and for standard brands of Bessemer, so far as we are advised, there are no sellers under \$19.00, four months.

**Muck Bar.**—The demand continues light, but prices remain unchanged, \$29 @ \$29.50, cash, as to quality, delivery, &c. So far as we are advised there have been no sales below \$29, cash. Trade is likely to continue light at present.

**Manufactured Iron.**—There is no improvement in demand, nor is it likely that there will be until the spring trade opens up. Some of the mills are reasonably well employed, while with others it is different. The outlook is by no means discouraging, and there is not much doubt but what the mills generally will be pretty well employed within a few weeks. Prices remain unchanged, and we continue to quote upon a basis of 1.85¢ @ 1.90¢ for Bars, 60 days, 2¢ off for cash.

**Nails.**—There has been some inquiry during the past week; we hear of an order for 5000 kegs, which could probably have been secured by making a slight concession from present prices, but this manufacturers are refusing to do. We continue to quote at \$1.90, 60 days, 2¢ off for cash. A meeting of the Western Nail Association has been called to take place at Wheeling to-morrow, which will be the first for several months. It is not likely that any change will be made in prices.

**Wrought-Iron Pipe.**—The demand continues light, as it nearly always is at this season of the year, and there is not likely to be any change for the better until the spring trade opens up. No change in prices. Discount on Black Butt-Welded Pipe, 47½¢; on Galvanized do., 37½¢; on Black Lap-Welded do., 60¢; on Galvanized do., 37½¢; Boiler Tubes 52½¢ off; Casing, all sizes, 50¢ off; 2-inch Tubing 14¢ per foot, net; 2-inch Line Pipe, 13¢; 8-inch Line Pipe \$1.40.

**Billets, &c.**—The market for Bessemer Steel Billets continues fairly active, a number of good-sized sales having been made recently, and all at \$29, cash. So far as we are advised, there has not been a single sale below \$29, cash, and we doubt whether a seller could be found here under this price. Foreign Billets have been shut out of this market for several months. Steel Nail Slabs quoted steady at \$29, cash, but the demand is light. Small sales of Bloom Ends at \$19 @ \$19.25 and Rail Ends at \$19.50, cash. Wire Rods (American) are quoted at \$41.

**Steel Rails.**—Heavy sections are still quoted at \$33, cash, on cars here for winter or spring delivery, but buyers, it appears, can do better elsewhere. An order on this

market a couple of weeks ago, and for which the price in question was demanded, was placed at Chicago, and, it is believed, for less money.

**Old Rails.**—The market here continues dull, and, in the absence of sales, it is difficult to give reliable quotations. A few days ago a broker reported having an order for 2000 tons of Tees at \$23, delivered in Pittsburgh, but he could there find no seller at that price. Consumers have been buying very sparingly for some time past, and it is evident are low in stock, and once the market begins to show signs of hardening an improved demand is almost certain to follow.

**Railway Track Supplies.**—Trade continues quiet, but will soon, no doubt, begin to show signs of improvement. Prices remain unchanged: Spikes, 2.60¢, 30 days, delivered; Splice Bars, 2¢ @ 2.10¢; Muck Bolts, 3¢, with Square and 3.10¢ with Hexagon Nuts.

**Old Material.**—The demand for all kinds of Old Material continues light, while prices remain unchanged. No. 1 Wrought Scrap, \$20, net on; Wrought Turnings, \$14 @ \$15; Car Axles, \$26 @ \$27; Cast Scrap, \$16.50 @ \$17; Gross Cast Borings, \$12 @ \$13; Old Car-Wheels nominal at \$19.50 @ \$20.

## Cincinnati.

Office of *The Iron Age*, Fourth and Main Sts., 1  
CINCINNATI, January 9, 1888.

Word comes from the North that a better and firmer feeling prevails throughout business circles interested in Pig Iron, and from this the conclusion is drawn that an advance is imminent. This may be so, but the actual and rumored transactions do not bear out the inference. The week under review has been more active and the urgent inquiry has been transferred from Foundry to Mill Iron. The volume of business accomplished does not represent the extent of the demand. But while the wants of consumers are large, the offerings are ample and the competition active, which last factor alone is a potent one at present, as may be gathered from a history of the various transactions. There have been a number of small sales of Mixed Silvery, Bright and No. 2 and No. 2½ and No. 3 Mill Iron by Cincinnati agents during the week, which in the aggregate may be approximately estimated at about 10,000 tons. In addition, 1000 tons Southern Car-Wheel Iron is reported at \$23.50, cash, here; 3800 tons Mixed Jackson County and Southern Iron; 12,000 tons Hanging Rock Coke Iron; 500 tons Lake Superior Charcoal at \$22.50, cash; 1500 tons No. 2 Foundry Iron at \$18.50, cash; No. 2 Foundry is also rumored to have been sold at \$18.25; No. 2 Mill Iron at \$15.75; and No. 1 do. at \$17.25, cash, or equivalent to such rate here. Louisville is said to have secured another sale of 12,000 tons Southern Iron for delivery during the next nine months, Cincinnati parties being interested in the sale.

### Hot-Blast Foundry.

Ohio Southern Coke, No. 1.....	\$20.00 @	\$20.50
Ohio Southern Coke, No. 2.....	18.50 @	19.00
Ohio Southern Coke, No. 2½.....	18.00 @	18.50
Ohio Soft Stone Coal, No. 1.....	20.00 @	20.50
Ohio Soft Stone Coal, No. 2.....	18.50 @	19.50
Mahoning Valley.....	20.50 @	21.00
Hanging Rock, Charcoal, No. 1.....	22.00 @	24.00
Hanging Rock Charcoal, No. 2.....	22.00 @	23.00
Tennessee and Alabama, No. 1.....	21.00 @	21.50
Tennessee and Alabama, No. 2.....	19.50 @	20.50

### Forge.

Strong Neutral Coke.....	17.00 @	17.50
Mottled Neutral Coke.....	15.50 @	16.00
Cold Short.....	16.00 @	17.00

### Car-Wheel and Malleable Irons.

Southern Car-Wheel.....	23.00 @	24.00
Hanging Rock, Cold Blast.....	24.00 @	25.00
Lake Superior Car-Wheel Malleable.....	22.50 @	23.00

**Manufactured Iron.**—There has been little doing recently; only one local mill has yet resumed, but several loads of Coal are now on their way to Cincinnati, the first fleet having already arrived, and a

speedy resumption of the other mills is looked for. There is a fair demand for both Bar and Sheet and a firm tone prevails.

**Nails.**—There has been a moderate jobbing demand and an easy market; 10d @ 60d sell at \$2 @ \$2.10  $\frac{1}{2}$  keg, and other sizes at proportionate rates. Steel Nails sell at \$2.10 @ \$2.20 and Steel Wire Nails \$3 @ \$3.10  $\frac{1}{2}$  keg.

**Old Rails and Wheels.**—There has been some little demand for both Nails and Wheels, but the offerings have been sufficient to supply the wants of consumers at about \$20 @ \$20.50 for Wheels, and \$23 for Rails.

## Louisville.

LOUISVILLE, KY., January 9, 1888.

**Pig Iron.**—The market is very unsettled. There is a difference of fully \$2.50 in the views of various Pig Iron furnaces. The opinion of several strong furnaces is that on account of the heavy buying that is going on, the coming year is going to be an excellent one; many consumers reporting that they expect business equal to that of 1887; and on this account some furnacemen are not willing to cut prices at all, but are holding firm. On the other hand, there have been some very low sales of Iron made by parties distrustful of the market. Silver Gray, that is held at \$18, in some instances has been sold by other parties at \$16. Foundry Irons show a similar difference of views. Irons made by Car-Wheel furnaces, however, are firm, and there is a prospect that a slight advance will be asked, as Car-Wheel companies are reported to be very heavily engaged and to have all the business that they can do. The buying of Iron has been very heavy, but this has only been on account of the low prices at which it could be obtained.

Southern Coke, No. 1 Foundry	\$19.50 @ \$20.50
" No. 2 "	18.00 @ 19.50
" No. 2 1/2 "	17.00 @ 19.00
Hanging Rock, Coke, No. 1 Foundry	19.50 @ 20.50
Hanging Rock, Charcoal, No. 1 Foundry	22.50 @ 24.00
Southern Charcoal, No. 1 Foundry	19.50 @ 21.50
Silver Gray different grades	16.00 @ 18.00
Southern Coke, No. 1 Mill, Neutral	16.50 @ 17.50
" No. 2 "	15.75 @ 17.75
" No. 1 " Cold Short	15.75 @ 17.75
White and Mottled, different grades	15.00 @ 16.00
Southern Car-Wheel, standard brands	24.00 @ 25.00
Southern Car-Wheel other brands	22.00 @ 23.00
Hanging Rock, Cold Blast	21.00 @ 25.00
Hanging Rock, Warm Blast	20.00 @ 21.00

## Birmingham.

BIRMINGHAM, ALA., January 9, 1887

The scarcity of money and consequent pinched condition of all manner of commerce—being in part the result of ill-advised speculation of a year ago, and, probably in larger measure, the normal reflex of what the money centers of the country passed through some three months ago—continues throughout this district. Manufacturing interests are about the brightest spot in the whole situation, though these are not in as high feather as they were a few months ago, demand being irregular and prices weak in almost every line.

**Pig Iron.**—This is conspicuously true of Iron lines. In Pig, the chief staple, though, there is some reason to believe the depression has touched bottom. In the matter of prices, actual transactions do not as yet show any improvement, but the correspondence of the local manufacturers for the last few days bears out what is represented by the published trade reports, that the market is generally healthier. Producers who counted on an increased inquiry for this month from buyers who have been playing a waiting game for the last few weeks felt better satisfied than ever that they had reckoned wisely. These, however, seem to be somewhat in the minority. Most of the managers, having

been willing enough to sell Iron even at somewhat short prices, apparently owe it chiefly to the timidity of consumers that the transactions of the last few weeks have not been sufficient, combined with arrears of former contracts, to put them practically out of the market for awhile. As it is, there has been no considerable increase of stocks.

**Finished Iron.**—Although there is a fair volume of demand again, buyers still secure the advantage in the Finished Iron market, especially in Bars. The market is generally timid, and in most shapes the tendency of prices is downward. Plates and Sheets are in sufficient request, but not at a premium at all. The local production altogether is larger just now than ever before, so that pioneer moves on the part of the management of the mills is especially timely. This condition has been met, in a measure, by a large increase of business with the far West, the result largely of improved facilities and reduced cost of transportation.

**Miscellaneous.**—The falling off in the railroad demand is noticeable in the aggregate business of several of the smaller Iron-working institutions, though in certain specialties, as in Frogs and Switches, about as much work still offers as could well be accommodated. Bolts and Nuts, which are usually scarce, are now abundant and cheaper than they have been for months. The largest manufacturer, for a reason of the moment, is offering inducements in them. The Stove trade is quiet. Cast Pipe is a little heavy on the market, and prices uncertain.

## Coal Market.

The Anthracite Coal market is in no better shape than a week ago, nor is the future less difficult to discern. It had been hoped that the annual meeting of the Reading Railroad Company would result in decisive action as affecting the disposition of the miners who refused to return to the old \$2.50 basis and relinquish the 4% advance made in September, but the stockholders ignored the whole question, thereby tacitly reaffirming the policy of President Corbin, leaving him alone responsible for the final issue. The two opposing forces are therefore fairly joined, and the struggle is a test of endurance. As the case stands the entire Schuylkill Coal region is non-productive, as well as the Lehigh region, and the question, Is it possible for the Wyoming Valley to make good the deficiency? becomes interesting. It is stated that every colliery in the Wyoming Valley is at work, and that hundreds of miners from the Lehigh and Schuylkill regions are going there in search of employment. Recent reports from that quarter were to the effect that the companies there could supply all the Anthracite needed in the country for the next six weeks. Meanwhile the furnaces and iron mills on the line of the Reading Railroad are suffering, and many must soon shut down unless fuel is provided. Several are temporarily supplying themselves with Bituminous Coal. Mr. Corbin's position is that there is nothing to arbitrate, that it is necessary to the future prosperity of the company that they have complete and absolute control of their own business. On the other hand, the miners, represented by Chairman Lee, threaten to call out all the miners of the Wyoming region if necessary to win the day.

The total amount of Anthracite Coal sent to market during the week was 509,336 tons, an increase of 1147 tons compared with the corresponding week last year, and the total for the year 1887 was 34,505,470 tons, an increase of 2,527,829 tons compared with the year 1886. The Pennsylvania Railroad carried 252,566 tons of Coal during the week and the Reading 30,000 tons. For the year the Pennsylvania Railroad carried 10,472,000 tons.

Prices of Anthracite are as follows: Free, Broken, \$4.20, f.o.b.; Egg, \$4.25 @ \$4.30, f.o.b.; Stove and Chestnut, \$5. The latter is very scarce, but the first mentioned are a little easy and not so difficult to get. These prices are fixed by middlemen. No companies will take orders for Stove and Chestnut except at current prices when shipped. Bituminous Coal is active and firm at \$3.70 in New York alongside. The Pennsylvania Railroad notifies shippers that through rates by the water route beyond Philadelphia and South Amboy are withdrawn. Shippers from the Clearfield region are notified that the company's cars cannot be used outside of Pennsylvania and New Jersey, excepting to fill existing orders. Shipments from the Cumberland region for the week were 57,823 tons, and for the year 3,327,531 tons, an increase of 776,409 tons as compared with 1886.

## IMPORTS.

The imports of Iron and steel, Hardware, &c., at this port from January 3 to January 7, inclusive, were as follows:

Iron and Steel.		Tons.
Pig Iron: Henderson Bros.	400	
G. W. Stetson & Co.	300	
N. S. Bartlett	300	
Crocker Bros.	201	
J. Williamson & Co.	200	
R. Crooks & Co.	200	
Dana & Co.	50	
Steel: F. S. Alditch	20	
C. Hugill	19	
C. M. Phillips	10	
N. Cohn	8	
R. F. Downing & Co.	6	
Steel Rods: A. Milne & Co.	535	
S. A. Galpin	360	
A. Heyn	96	
R. H. Wolff & Co.	93	
Cary & Moen	80	
Dana & Co.	5	
Iron: J. Abbott & Co.	537	
Page, Newell & Co.	71	
Gustaf Lundberg	50	
C. M. Phillips	6	
Abert Bros.	3	
Steel Plates: Naylor & Co.	67	
Hondollette & D.	34	
Steel Forgings: Thos. Prosser & Son	92	
Bethlehem Iron Company	86	
Steel sheets: Pierson & Co.	49	
A. R. Whitney & Co.	41	
A. Milne & Co.	25	
Lalance & G. Mfg. Co.	15	
Naylor & Co.	5	
Steel Billets: A. Milne & Co.	137	
Steel hoops: A. R. Whitney & Co.	251	
Steel Bars: Union Bridge Co.	69	
Hoop Steel: A. R. Whitney & Co.	17	
Scrap Steel: Belcher & Parks	16	
Sheet Iron: T. B. Coddington & Co.	24	
Iron Rods: J. Abbott & Co.	126	
Page, Newell & Co.	20	
Iron Girders: R. F. Downing & Co.	135	
W. H. Wallace & Co.	77	
Nail Rods: Bacon & Co.	43	
J. Abbott & Co.	25	
Scrap Iron: Burgess & Co.	170	
Rivet Rods: J. Abbott & Co.	101	
Muller, S. & Co.	75	
G. Lundberg	60	
Bacon & Co.	38	
Siemens Metal: Page, Newell & Co.	15	
Old Iron Rails: Neumark & Gross	260	

## Tin Plates.

	Boxes.
Dickerson, Van Duzen & Co.	14,888
Phelps, Dodge & Co.	4,554
A. A. Thomsen & Co.	4,361
Naylor & Co.	1,507
T. B. Coddington & Co.	3,237
N. L. Cort & Co.	2,635
Bruce & Cook	2,297
Pratt Mfg. Co.	1,980
Central Stamping Co.	1,061
Bruce & Cook	1,019
R. Crooks & Co.	896
H. R. De Milt & Co.	650
Merchant & Co.	263
Lalance & G. Mfg. Co.	215
H. Wittemore	191

## Metals.

	Pounds.
Tin: Phelps, Dodge & Co.	54,651
Naylor & Co.	22,409
Old Copper: Pim, Forwood & Co.	2,868
Nickel: McCoy & Sanders	5,400
Spelter: Frindersville Zinc Co.	6,614

Irons and Metals Warehoused from January 3 to January 7, inclusive:

	Tons.
Iron: G. Lundberg	36
Old Iron rails: G. W. Stetson & Co.	230
Spiegel: Naylor & Co.	246

Copper: J. Abbott & Co. 35,880  
Exports of Metals from January 3 to January 7, inclusive.

	Pounds.
Copper: J. Abbott & Co.	1,075,000
American Metal Co.	515,864
Orford C. & S. Co.	102,941
Copper Matte: Williams & Iernane	984,530



## General Hardware.

The attention of merchants and manufacturers is given largely to closing of the last year's business and making preparation for the spring trade. There are perhaps the usual number of business changes, and, as referred to below, numerous announcements of revised prices and other matters connected with the operations of manufacturers. The tone of the market continues without change. The demand is moderate, but an excellent feeling prevails.

### NAILS.

Compared with a week ago the feeling in the Nail market is perhaps a trifle better, not that prices are any stronger, but there is a tendency among makers to hold their product rather than sell freely at current rates. There is usually an accumulation of stocks at this time preparatory to the large spring demand, but up to date the volume of trade has been heavy because of the open winter, which has permitted late building operations. The universal complaint, however, among makers is that Nails are selling at unremunerative prices, and, furthermore, there is no belief expressed that the immediate future will bring about any better condition of affairs. The exact state of present stocks is not yet known, but they are not considered to be heavy. The Reading strike is proving a source of the greatest inconvenience to a number of large mills, cutting off coal supply and interfering with transportation. Some of the Susquehanna mills are also finding it difficult to get coal. The regular monthly meeting of the Atlantic States Nail Association will be held in New York to-morrow. It is entirely a matter of conjecture whether anything of importance will be done or not. Makers are not at all satisfied with present rates, and would eagerly welcome any practicable plan for advancing prices. Such a plan, however, is not easily devised, and is still more difficult to carry into effect. It is simply unlikely that the meeting will prove simply the formal gathering that it usually is. We quote \$1.90 on dock for Iron Nails, and \$2 to \$2.05 for small lots from store.

The Fall River Iron Works Company, of Fall River, Mass., have about 340 kegs of Nails, the last of their Nail business, from which they withdrew some time since. A portion of them is an accumulation of sizes once in demand, but not now generally used. They offer them at a discount.

### WIRE NAILS.

There is fair activity in these goods, but prices are referred to as low and unprofitable. Notwithstanding this fact the manufacturers appear to be desirous of securing orders, many of them at the extreme prices which have recently prevailed. Further concessions beyond these prices are now made by some of the largest manufacturers, who appear to be desirous of securing orders even at these very low prices. Carload lots at factory may be regularly quoted at \$2.60, and small lots from store in this market at \$2.75 to \$2.80. Goods sold by list and discount are also somewhat lower, the quotations now being discount 60 and 10 and 10 to 70 per cent.

### BARB WIRE.

From our Chicago office we receive the following: A decision of interest to Barb Wire manufacturers was rendered on the 5th inst. at Dubuque, Iowa, by Judge Shiros, of the United States District Court in that city. The Washburn and Moen Mfg. Company had sued the Beat 'Em All Barb Wire Company, of Waterloo, Iowa, claiming damages for an infringement of a patent issued in 1874 to Joseph F. Glidden. The trial began on the 21st of December, and was hotly contested by both the parties. In behalf of the defendants it was shown that the second Wire, twisted about the fence strand for the purpose

of holding the barb in place, was an old device, being clearly set forth in a patent issued to Michael Kelly, in 1868, and which has therefore expired. But, in addition to this, evidence was presented to prove that in 1859 Alvin Morley, an insane man of Delaware County, Iowa, who before and since that time resided in an asylum, twisted a Barb-Wire fence, sections of which were exhibited at an obscure county fair. Fifteen years later Mr. Glidden obtained letters patent for the Barb Wire fencing, which he assigned to the Washburn & Moen Mfg. Company. Judge Shiros rendered a voluminous decision in this case, the principal point of which is that he declares the Glidden patent void for want of novelty. In rendering this decision Judge Shiros antagonizes the decisions heretofore made in similar cases by other United States judges of high standing and of acknowledged authority on patent cases. An appeal will very probably be taken to the Supreme Court by the plaintiffs. If, however, they meet with defeat after taking this step, it does not follow that the manufacture of Barb Wire will then be thrown open to everybody without payment of royalty. Independently of the Barb-Wire patents, the Washburn & Moen Mfg. Company will still control the trade to some extent for years to come through their ownership of the patents on the automatic machinery by which the Wire is barbed. According to some authorities the machinery patents have long been considered of greater value to the company than the patents on the form of the barb. The royalty of 15 cents per 100 pounds charged by the Washburn & Moen Mfg. Company covers the right to use their machinery as well as to make the Barb Wire. They have made no extra charge for the use of the most improved machines controlled by them, although for some of the patents of this kind they have paid very large amounts. Those who are well informed as to the true condition of the Barb-Wire trade are amused at the statements in the daily press that the defeat of the Washburn & Moen Mfg. Company means cheaper Barb Wire to the consumer. If the payment of royalty to them were to cease entirely the consumer would not appreciate the difference, as the price of Barb Wire has for a long time been regulated by other circumstances than the royalty due on it to the owners of the patents. On occasion Barb Wire has been sold at cost or even below it. The non-payment of royalty would be of benefit to the manufacturer, especially if his annual product runs up into thousands of tons, but its effect on the trade would very probably stop there and be felt no further.

### MISCELLANEOUS PRICES.

The reduction in the price of Paper Shells by the Ammunition Manufacturers' Association, to which we referred in our last issue, has been announced, the new prices being as follows, with the usual additional discount of 2 per cent. for cash:

	Discount.
First quality, 4, 8, 10 and 12 gauge.....	25&10%
First quality, 14, 16 and 20 gauge (\$10 list).....	30&10%
Star, Club, Rival and Climax Brands, 10 gauge, \$9 list.....	33%&19%
Star, Club, Rival and Climax Brands, 12 gauge, \$8.....	33%&10%
Club, Rival and Climax Brands, 14, 16 and 20 gauge.....	30&10%

The Penn Hardware Company, Reading, Pa., for whom Sise, Gibson & Co. are agent, 100 Chambers street, New York, issue, under date of January 10, their No. 2 discount sheet, applying to their catalogue of 1887, and giving revised list prices of Door-Locks, Knobs, Escutcheons, &c.

The Lufkin Rule Company, Cleveland, Ohio., have advanced the retail price of their No. 95 3-foot Tinner's Circumference

Rule to \$2.50 each, and have also added to their list a 4-foot length of this Rule, the price of which is \$3.

Moore's Concave Reamer, manufactured by the Moore & Barnes Mfg. Company, 103 Chambers street, New York, and illustrated on page 68, is sold at \$1 per dozen or \$8 per gross.

The Lock manufacturers are engaged in a careful revision of the list, but the results are not yet announced.

The change in the price of the Hardware list of Brass Cocks, Bibbs, &c., which we have referred to as likely to occur, has now been made, the announced discounts being as follows:

	Per cent.
Brass Cocks.....	40&10
Bibbs.....	50&10

Moore's Concave Nail Set, manufactured by the Moore & Barnes Mfg. Company, 103 Chambers street, New York, and illustrated in our last issue, is sold at 75 cents per dozen or \$7.50 per gross. The Nail Sets are packed one dozen assorted sizes in a box and 10 gross in a case.

The Humason & Beckley Mfg. Company, New Britain, Conn., and 80 Chambers street, New York, are sending out a new illustrated catalogue and price list, bearing date January 1, 1888. It is printed in the clear and satisfactory form which characterized their former catalogues, and contains some additional matter, revision of lists, &c. Among the leading lines of goods to which it is devoted are Hammers, Screw-Drivers, Pliers, Bolts, Bright Wire Goods, Wrought Goods, Corkscrews, of which an interesting variety is exhibited, and Pocket Cutlery, a line to which a number of additions have been made. The Knives are represented in full-sized cuts, which show them very satisfactorily. The list is accompanied by the following discount sheet:

	Discount Per Cent.
Hammers.....	40
Tack & Laws.....	50
Nail Sets.....	70&10
Screw Drivers.....	60&10
Screw Driver Bits.....	40&10
Saw Sets.....	30&10
Belt Punches.....	40
Pliers.....	50
Box Chisels.....	60
Butter and Cheese Tryers.....	25
Bolts.....	70
Malleable Hooks and Eyes.....	70
Rail Screws.....	70
Bright Wire Goods.....	75&10
Meat Hooks, Wire.....	80&10
Meat Hooks, Wrought.....	80&10
Staples, and Hooks with Staples.....	80&10
Hooks, and Hooks with Hook, with Staples.....	80&10
Rings, and Rings with Staples.....	80&10
Awning Hooks.....	80&10
Bow Pins.....	60&10
Cattle Leaders.....	70
Bull Rings.....	70
Bull Punches.....	25
Box Hooks.....	50&10
Cotton Hooks.....	50&10
Hay Hooks.....	50&10
Box Scrapers.....	40&10
Nut Crackers.....	40
Champagne Openers.....	40
Can Openers.....	50
Key Rings.....	40
Hoof Cleaners.....	20
Cork Screws.....	40
Pocket Cutlery.....	33%
Tuning Forks.....	20
Triangles.....	60

An announcement of an advance in the price of Blacksmiths' Stocks and Dies has been made by Holroyd & Co. and J. M. King & Co., Waterford, N. Y. The advance is understood to be about 10 per cent.

It is understood that the Association of Ammunition Manufacturers are considering what action it is best to take in view of the fact that a very large proportion of the goods are sold through the special agents, most of the large dealers purchasing from them instead of direct from the manufacturers. It is intimated that with this condition of things, and the tendency of the trade toward these special agents, nearly all the goods sold will soon go through their hands unless something

is done to divert the trade into the regular channels. Precisely what it will be thought advisable to do in the matter is not, however, determined.

The announcement of the change in the price of Common Carriage Bolts, by which the regular discount was made 75 and 15 per cent., with a materially reduced rebate, was received by the large trade with much disfavor, and a good deal of feeling was awakened on account of its effect in cutting down the profit in handling the goods. So decided and influential was the opposition to the new discounts that the Executive Committee of the Bolt Manufacturers' Association, at their meeting last week, rescinded the action, changing the discount, and returning to the former scheme of prices, the regular quotation being again made 70 and 10 per cent., with rebates as before. The manufacturers are, however, many of them in doubt as to whether this was the wiser course, the fact that jobbers have been in many cases dividing their rebates leading them to fear that this may be still done. An effort is, however, being made to induce the maintenance of the regular price by the wholesale houses, and it is thought with good prospect of success.

The Oneida Community, Oneida, N. Y., announce that the discounts they are now making on the list prices of their Traps renders necessary a slight revision of the list. They accordingly announce that, beginning with January 1, 1888, the list of the No. 1 Trap, with chains, is advanced from \$4.65 to \$4.75 per dozen, and that the No. 3 Trap, with chains, is advanced from \$13.75 to \$14 per dozen. They refer to this as leaving the No. 1 Trap still too low relatively to the other sizes, but they have not thought it best to make any greater change at present.

Ohio Tool Company, Columbus, Ohio, under date January 2, in consequence of the advance in Steel and other materials entering into the manufacture of their goods, withdraw quotations made by them.

More than half of the Threshing Machine manufacturers of the country were represented at a meeting at the Sherman House, Chicago, on the 5th inst., at which was organized the American Threshing Machine Manufacturers' Association. The representation was almost exclusively Western and embraced the leading companies of Wisconsin, Michigan, Ohio and Indiana. The organization was worked up by J. W. French, of Three Rivers, Mich., who was chairman of the meeting. It is the same old story of overproduction, low prices, and cut-throat competition. After the organization of the association was effected, it was resolved to curtail production 10 per cent. for 1888, to let prices alone, and to have a uniform credit system requiring 20 per cent. down, 20 per cent. the following December, and the remainder during the second year. A constitution was partially formed and the following officers elected: President, Stephen Bull, of Racine, Wis.; vice-president, J. W. French; Executive Committee, H. C. Fogel, Canton, Ohio; M. Kingman, Toledo; W. G. Scott, Richmond, Ind., and Messrs. Bull and French.

Machine Bolts and Bolt Ends are no firmer than they have been, and prices show some indications of slightly increased weakness.

There is animated competition between the leading manufacturers of Blind Hinges, and prices on some styles are materially reduced.

Owing to the outside competition in Coffee Mills the older manufacturers have reduced the price of Box Mills, making the first discount on these goods 50 per cent., while it remains as before at 45 per cent. on the Side Mills. On both lines

an extra 10 and 2 per cent. for cash is usually made to fair buyers.

A sharp advance has been made in the price of Britannia Spoons, on account of the increased cost of the material.

#### ITEMS.

The Springfield Roadster, manufactured by the Springfield Bicycle Mfg. Company, for whom the John P. Lovell Arms Company, Boston, Mass., are sole agents for New England, is described in a recently issued pamphlet. The cover gives a cut representing the Roadster, and illustrating the special features of its construction, while the body of the pamphlet is devoted to more detailed description of the machine and an explanation of its mechanism, giving also a number of testimonials from those who have used the machine, and also representing a number of specialties relating to cycling. The points claimed for this machine, among which are strength, good workmanship and its special adaptation to hill climbing, and especially that in its use headers are avoided, are emphasized, together with the finish and the moderate price at which it is offered. Of the Springfield Bicycle Mfg. Company, by whom it is made, J. B. McCune is president, J. L. Yost, treasurer, and Benjamin S. Lovell, manager.

E. C. Stearns & Co., Syracuse, N. Y., have issued an exceedingly attractive catalogue of their Hardware specialties, representing their varied line and comprising an unusually large and attractive variety of Door Hangers, Screen Frames, Clamps, Vises, Augers and other specialties. The pamphlet has an exceptionally tasty and attractive cover, and is finely printed and fully illustrated. It is to be noted as a matter of congratulation to the trade that the pamphlet is 9 x 6 inches, thus conforming to what may be regarded as the standard size, a general adherence to which by manufacturers would serve the convenience of the purchasers.

The Reading Hardware Company, Reading, Pa., and 81 Reade street, New York, made a change in the management of their New York store January 1. William H. Jarvis, who for a number of years had charge of the Philadelphia house, has been transferred to take the management of the store at 81 Reade street, in this city, and his extensive acquaintance with the Hardware trade here and elsewhere will doubtless enable him to serve efficiently the company he represents. He has associated with him C. H. Naylor, formerly with Samuel G. B. Cook & Co., of Baltimore, who has traveled South and West, and will take charge of the salesroom and stock. G. W. Morris, formerly with Farrington, Whitney & Co., and W. Felter, Jr., who was for many years connected with the Pennsylvania Railroad Company in their accounting department, also have appropriate positions. With the large facilities the company possess, and the improvements they have made to their works, together with the additional advantages acquired in the leasing of the Manhattan Hardware Works, referred to in another column, they are in a position to meet the demands of their increasing business. The new management of the branch house will have the best wishes of the trade for their success.

A large building at 302 to 308 Dearborn street, Chicago, which was devoted to light manufacturing, was burned on the 7th inst., causing considerable loss to numerous tenants. Among the unfortunates is Wm. F. Kellett, manufacturer of patent Plane Bits.

The copartnerships of Rattray & Co., Valparaiso, Chili, and Samuel D. Crane & Co., Boston, Mass., expired by limitation December 31, 1887. In future Henry F. Greenleaf, a member of the late firm, will

be the resident partner in the United States, his address being No. 27 Kilby street, Boston.

The Haxtun Steam-Heater Company, of Kewanee, Ill., have suffered serious inconvenience in the transaction of their business by the destruction of their Wrought-Iron Pipe mill by fire on the 1st inst. The loss was from \$30,000 to \$50,000, governed in amount by the extent of damage to the machinery. It was fully covered by insurance. New buildings, larger than the old ones, will be erected as quickly as possible. A large part of their works escaped without injury.

William Shimer, Son & Co., Freemansburg, Pa., issue an illustrated catalogue of the Shimersville Hardware Works. It represents the line of Hardware and House Furnishing Specialties of which they are manufacturers, including Sad Irons, Counter Scales, Shelf Brackets, Hooks, Hammers, Stove Lifters, Match Safes, Clamps, Garden Tools, Handles, &c.

Announcement is made under date of January 2 that Henry W. Merchant has been admitted as a member of the firm of Merchant & Co., Philadelphia.

The Lufkin Rule Company, Cleveland, Ohio, announce to their customers in the Western States that they have appointed H. H. and C. L. Munger, 142 Lake street, Chicago, their general Western agents, with whom they will carry a full stock of their goods. The company have discontinued their branch office on Van Buren street, and intimate that they shall be better able to serve their trade through the Messrs. Munger.

Chess, Cook & Co., Pittsburgh, Pa., have issued, in small pamphlet form, a new Tack list, together with the discount sheet relating to it.

The catalogue of the Railroad Step Ladder which Morley Bros., East Saginaw, Mich., are sending out gives a full description of the Ladder, explaining its special features, illustrating its use and giving detailed instructions in regard to applying it. A number of testimonials from leading houses are also given. For the convenience of those desiring quotations on the Ladders a blank form printed in copying ink is sent out which provides for the convenient giving of the requisite information for Ladders adapted to the varying circumstances of the dealers.

The Shepard Hardware Company, Buffalo, N. Y., issue a circular relating to a Cylinder Ring which they refer to as having been put on the market, made partly in imitation of the Buttles' Patent Cylinder Ring (one ring being sunken and the other flat), and state that any infringement of their rights under letters patent or in the use of the name Buttles in connection with any imitation Rings will be dealt with according to the law.

Bruce & Cook, the well-known importers of Metals, 186-190 Water street, New York, have issued their calendar for next year, in which also a view is given of their establishment, together with a list of the leading goods in which they are interested. In the circular which accompanies it, which is headed with the greeting, "Happy New Year," they mention that their calendar makes its fifteenth annual appearance, and records the days which will comprise the seventy-sixth year in the history of their business, during all of which they have owned and occupied the building in which they write, such additions being made since 1812 as were necessary. Alluding to the past year they say:

For the year that has passed the special features in Metal lines were a shortness of stock Tin and Terne Plates during the summer months owing to drought in Wales



district. About November 1 a French syndicate took hold of Pig Tin, and by manipulation of the market forced prices up about 50 per cent., and later on Copper received the same attention. Pig Lead and Spelter were also affected, and the influence has been felt in all the manufactures into which these articles enter. We believe that present Metal values are too high, and that a reaction must come, but in the judgment of many this will not be for some months.

Palmer, Cunningham & Co., 607 Market street, Philadelphia, have issued a compact, convenient and exceedingly satisfactory catalogue of their line of tools for machinists, jewelers, model-makers, engravers, carpenters, pattern-makers, wood carvers, coach and wagon builders, blacksmiths, molders, &c. Attention is also called to the fact that they are importers of Stubbs's Files, Tools and Steel, and that they furnish Pulleys, Hangers, Shafting, Belting, Factory and Mill Supplies, &c. The exhibition of this varied line of goods occupies 250 large pages, in which there is a condensed presentation, with copious illustrations, descriptive matter and list prices. The trade will be interested in the volume, which will be found serviceable, and which bears testimony to the enterprise of the house.

A recent issue of the *Northwest Magazine* is devoted largely to an exhibition of the development, trade, buildings, &c., of Helena, Montana. The history of the city is given, and also many illustrations of its principal buildings, most important industries and portraits of its leading citizens, making an interesting and impressive exhibit of the importance of the city. Among the illustrations are two representing the interior of the A. M. Holter Hardware Company's store, indicating its extent and attractiveness, and something of the convenience and completeness of its arrangement.

Chas. B. Holdrege, Bloomington, Ill., representing the Simmons Hardware Company, announces, January 4, that they have purchased all the manufactured stock of the Bridgeport Cutlery Company, consisting of Table Knives and Forks, Carvers, &c., aggregating \$50,000 in value, and alluding to the inducements they are able to offer on this line. It is intimated that those who visit the house about February 1 will be able to inspect the entire stock.

T. S. Casey & Co., 115 Dearborn street, Chicago, have been appointed sales agents for the Cincinnati Wire Company, of Cincinnati, Ohio, manufacturers of Wire Nails, Brass and Steel Escutcheon Pins, &c. Mr. Casey has had long experience in the sale of Nails in the Chicago market, and has for many years represented some of the most prominent Wheeling manufacturers of Steel Cut Nails.

The Auburn Mfg. Company, Auburn, N. Y., who are represented by J. C. McCarty & Co., 97 Chambers street, New York, have just issued their 1888 catalogue, which is printed in their usual attractive style with colored representations of the finish of their goods. It shows the varied line of which they are the manufacturers, with the latest additions, and lists corrected up to date.

#### PRICES DURING 1887.

The following table, including as it does many leading lines of Hardware, and giving prices on them at the opening of both 1887 and 1888, will be of interest. It will be understood that the quotations given are those that represent as nearly as may be the current market prices at the respective dates. Where a new list has been adopted it is marked by an asterisk:

	January 1, 1887.	January 1, 1888.
Cartridges, Rim.....	60&2	50&5&2
Augers and Bits.....	60&10	70 @ 70&5
Axes, Best.....	\$6.50 @ \$7.00	\$6.50 @ \$6.75
Axles, Nos. 1 to 6.....	3½¢	No. 2, 5 @ 5¼¢
Axles, Nos. 7 to 18.....	60&10&5	50 @ 50&10
Axles, Nos. 19 to 22.....	70&5	60&10&10
Spring Balances.....	50	50
Light Hand Bells.....	75&10&5	75&5 @ 75&10
Blacksmiths' Bellows.....	60	50&10 @ 50&10&5
Rubber Belting, Standard.....	70&10&5	70&5
Rubber Belting, Extra.....	60&10&10	60&10
Tackle Blocks.....	60&10&5	40
Bolts, Bast-Iron Barrel, &c.....	70&10	70 @ 70&10
Bolts, Wrought Barrel, &c.....	70&10	70 @ 70&10
Carriage Bolts, Common.....	75	70&15&3
Carriage Bolts, Genuine Eagle.....	75&5	75 @ 75&5
Carriage Bolts, Philadelphia Pattern.....	75&10&5	75&10 @ 75&10&5
Carriage Bolts, R. B. & W.....	70&5	70
Tire Bolts, Common.....	70	65&10
Tire Bolts, R. B. & W.....	80&5	82
Machine Bolts.....	70&10	70&10 @ 75
Bright Wire Goods.....	75&10	75&10&10
Butts, Wrought Brass.....	80	75 @ 75&5
Butts, Cast Iron.....	70&10	66½&10
Butts, Wrought Iron.....	65&5&2	65&10 @ 70
Casters.....	60&5	50&10 @ 60&5
Chain, Trace.....	60	50&10&5 @ 50&10&7½
Chain, Coil, ¼ inch.....	5¼¢	6.40¢
Chain, Coil, ½ inch.....	4¢	4.20¢
Chisels, Socket, Framing, &c.....	75&5	75&10 @ 75&10&5
Brass Cocks, Hardware list.....	55&10&2	55&2
Coffee Mills.....	45&10&2	45&10&2
Cradles, Grain.....	50	50&10 @ 60
Drawing Knives.....	75&5	75&10 @ 75&10&5
Dripping Pans.....	5½¢	6½ @ 7¢
Files, best brands.....	60&10&10	60&10 @ 60&10&5
Files, lower grade.....	70 @ 70&10	70 @ 70&10
Forks, Hay, Manure, &c.....	60&10&10	65&5
Handles, Hammer, Hatchet, &c.....	25&5	35
Hinges, Screw Hook and Strap, 8-12 in.....	4 @ 4½¢	3½¢ @ 3¾¢
Hoes, Handled.....	60&10&10	65&5
Stove Hollow-ware, Ground.....	60&10&5	60&10&10
Stove Hollow-ware, Unground.....	70&5	70&10&5
Enameled Kettles.....	50&10	70&10
Oval Boilers, Sauce Pans, &c.....	35	40&10 @ 50
Belt Hooks.....	80	75&10 @ 80
Rubber Hose, low grade.....	75&10&5	75&10 @ 80
Brass Kettles, 7 to 17 inch, Spun.....	22¢	24¢
Tubular Lanterns, without guards.....	\$5.75	\$5.75
Door Locks.....	45&10	* 50&10 @ 60&5
Cabinet Locks.....	40&2	33½&2
Padlocks.....	75&5	65&10&2 @ —
Molasses Gates, Stebbins's Pattern.....	75&5	70 @ 70&7½
Molasses Gates, Stebbins's Genuine.....	66½&10	60&10&10
Wire Nails.....	50&10	* 60&10 @ 60&10&10
Picks and Mattocks.....	60&10	60&5 @ 60&10
Wrought Iron Pipe, 1½ and under, plain.....	35	47½
Wrought Iron Pipe, 1½ and under, gal.....	25	37½
Wrought Iron Pipe, 1½ and over, plain.....	52½	57½
Wrought Iron Pipe, 1½ and over, galvav.....	35	45
Planes, Bench, first quality.....	20&2 +	60 @ 60&5
Planes, Bench, second quality.....	25&2 +	60&10
Pumps, Cistern, best makers.....	50 @ 60&10	50 @ 60&10
Pumps, Pitcher Spout, best makers.....	60&10&10	60&10 @ 60&10&10
Pumps, Pitcher Spout, cheaper grades.....	70&10&5	70&5 @ 70&10&5
Rakes, Steel.....	60&10&10	65&5 @ 70
Rakes, Malleable.....	60&10&10	70 @ 70&5
Iron Rivets.....	60	* 50
Copper Rivets and Burrs.....	60&5	50
Manila Rope, ½ inch and larger, list.....	13¢	10½¢
Sisal Rope, ½ inch and larger, list.....	11¢	9¼¢
Rules, Boxwood.....	80&10 @ 80&10&10	80&10 @ —
Sad Irons, per 100 lb.....	\$2.35 @ \$2.50	\$2.75 @ \$2.85
Sandpaper.....	20&10	20
Sash Weights, ton lots.....	\$22.50	\$22.50 @ \$25.00
Screws.....	75	* 70 @ 70&10
Horseshoes.....	\$3.75	\$4.00
Shot, 25-pound bag.....	\$1.60	\$1.50
Squares, Steel and Iron.....	70&10&10	70 @ 70&10
Blacksmiths' Stocks and Dies.....	40	30&10 @ 40
Tacks, American Iron Carpet.....	75	75 @ 75&10
Swede's Iron Carpet.....	75	75 @ 75&10
American Iron Cut Tacks.....	70&10	75 @ 75&5
Finishing Nails.....	55	60&10&5
Hungarian Nails.....	60	60&10&5
Tacks, Leathered Carpet.....	40&7½	50&10
Tacks, Double-Pointed.....	80&10	85
Solid Box Vises.....	50&10&5	50&10&5 @ 60
Wire, Market, 0-18.....	72½&5	70&10&5
Wire, Brass and Copper.....	25&5	20
Wire Cloth, No. 34 Wire.....	\$1.90	\$1.90
Wrought Goods.....	80&25	80&20 @ 85&10

## THE ARRANGEMENT OF HARDWARE STORES.

In view of the interest with which the series of articles published in these columns in regard to the arrangement of Hardware stores was received by the trade, and the many expressions we have had of the service they have been to Hardware men in enabling them to secure an improved arrangement of their stores, we take pleasure in resuming the discussion of the subject. With the information which we have gathered from merchants in different parts of the country we hope to be able to present the trade an especially interesting and useful series of descriptions of Hardware stores, large and small, and of approved methods adopted in displaying and storing goods. We desire also to extend to the trade an earnest invitation to send us such advice bearing on this subject as they can, describing especially any fixtures in their stores or methods of accommodating goods which they have found desirable. We shall be gratified if the trade will bring to our attention anything connected with the arrangement or management of a Hardware store which may seem to have meritorious features. The information thus gathered and the suggestions made by those who are engaged in this line of business, will be of service to many of our readers, and will aid us in the endeavor to give the trade such practical details as will enable them to make their stores more attractive, while at the same time their business is conducted with more convenience and greater profit. The hearty co-operation which we have received in our former efforts in this direction we take especial pleasure in acknowledging.

The accompanying illustrations represent the arrangement of the store of C. P. Sherwood, White Plains, N. Y., and some of its fixtures, which are deserving of particular mention. The store is on the street floor of a new three-story brick building erected for the purpose, the exterior being of brick and brown stone, with handsome show-windows on either side of the wide entrance, as shown in Fig. 168. The store is 25 x 90 feet, and entirely finished in white wood with trimmings of cherry, the ceiling being elaborately paneled in the same material. On either side of the ample entrance doors are large plate-glass show-windows, which project outside the building line about 2 feet. The floor of the windows, as indicated in the diagram, is also carried back into the store about 3½ feet, thus giving in each window a clear floor space of 5½ x 7 feet, which is raised as usual about 2 feet above the floor of the store. It is covered with green cloth or carpet. This window space is not separated from the rest of the store by any other windows, or by screens of any kind, except some curtains of mosquito netting which hang from the ceiling, thereby rendering it easy to change and rearrange the displays there made. The entrance doors are flush with the back of the window space, forming a sort of vestibule, the floor of which is tiled. The diagram also indicates the general arrangement of the store, showing location of the counters, the goods to which they are devoted, and also the tables, racks, &c., which are used. The shelving along the sides is also indicated with the designation of the principal goods thus accommodated. An open stairway, finished to correspond with the other woodwork of the store, leads from the back of the store to the tin-shop above, which occupies the rear half of the second floor, and to the stockroom forward. An elevator balanced upon weights reaches from the cellar to all the floors.

One of the features of the store is a large fireplace, shown in Fig. 169 and also indicated on the diagram, Fig. 168. In addition to the ornamental effect thus produced

this fireplace is referred to as furnishing an excellent means of displaying the kinds of goods used about fireplaces—And-Irons, Fire-Irons, Coal Scuttles, Coal Vases, &c. It will readily be seen that a tasty and effective display can thus readily be secured. It will be observed that near the fireplace the shelving is devoted to Lamps, Clocks, Agate and Japanned Ware, and that under ledge on which these goods rest are shelves which can be drawn out if desired, giving a convenient place on which to stand them while offering them to the inspection of the customer, these shelves being pushed in out of the way when desired. One of the shelves is shown extended in Fig. 169.

Fig. 170 represents a method used for displaying Hanging Lamps. A few inches below the high ceiling a brass tube or rod is suspended, from which upon hooks of adjustable length are hung the samples of Lamps. A light netting passing over the rod hangs down on each side and is brought together to protect the goods in summer.

Fig. 171 illustrates a convenient device. It consists of a pair of small scales mounted on a bench with casters, permitting its easy removal to any desired place.

There are other features of interest in the arrangement of this exceptionally attractive store, the illustration of which, the pressure on our columns, compels us to defer until our next issue.

## SUGGESTIONS FOR DEALERS.

The following letter, which we take from the *London Ironmonger*, contains suggestions in regard to business methods, and, although it relates especially to trade in England, may be of interest to dealers in this country:

I will divide my subject as under: 1, The master; 2, the assistant; 3, the stock and shop. Each of these has its part to play in making the shop attractive.

1. In large business, where the master is a gentleman, and only drives down to business two or three hours a day, my remarks will not apply. I intend them where the master works, and takes his share in the work. The master ought to be moving among the customers, not shut up in an inner office out of sight of every one. He may be quiet there, free from any worry and able to attend to his books, but I believe in having your desk so situated that you can see every customer who comes into the shop, hear what is asked for, and see that the customer is properly served. It is astonishing how much many customers think of the master speaking to them. At the same time, do not interfere with your assistants too much. If your assistant cannot sell or serve, do not keep him. Of course where you keep workmen you cannot always be in the shop, but keep in the shop as much as possible.

To the assistants I say—be in the shop punctually at your time (and to the master I say—let them leave punctually). Take a pride in your appearance, and, above all things, do not fall into that dreadful habit of slipping out at 11 o'clock for your "glass of bitters." It often grows to two or three glasses. Then you come straight back, and, with your breath smelling vilely, you go to serve a lady. If you could only know what that lady thinks! Do not mind trouble. If a customer asks the price of half-a-dozen Knives and Forks or a Fender, do not be satisfied with telling the price, but show the articles. In most cases you will effect a sale. The principal thing in keeping your shop well up is in dressing your windows. How many neglect this point! What to put in your windows depends a great deal on the position. If you are exposed to the sun all day you must not put in Tea Trays or anything that will blister or lose its color. Put everything in its proper season. In September show Lamps; in February

put in Garden Tools—you may introduce Sheep-Shears, Scythes, Garden-Hose, Paint in tins; also goods

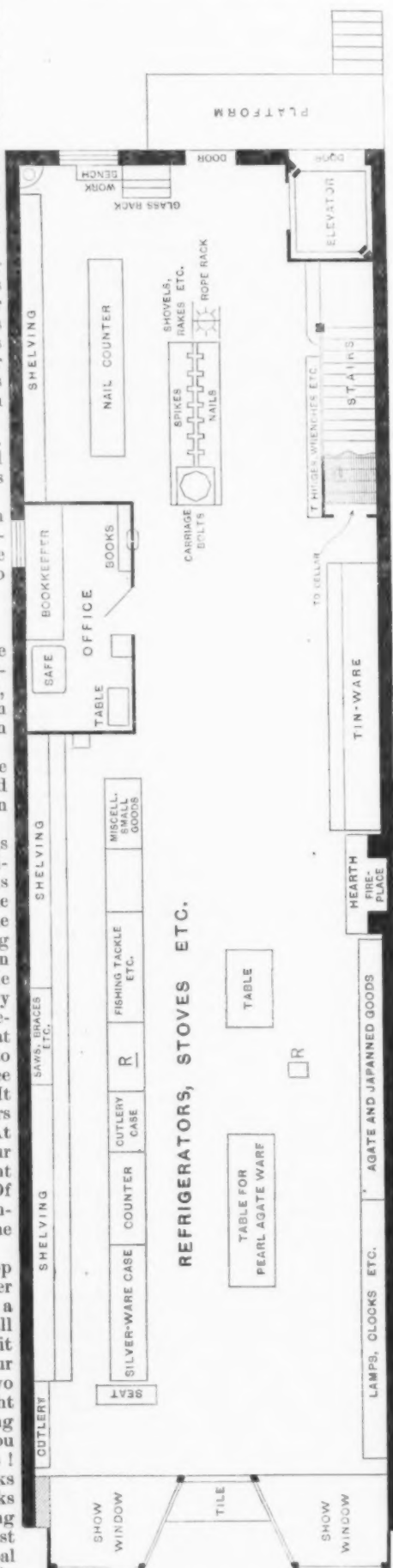


Fig. 168.—Store of C. P. Sherwood, White Plains, N. Y.

used in house cleaning, Furniture Polish, Brunswick Black, Scrub Brushes, Chamois Leathers—all these put well to the front. In June put out the Preserving



Pans. This is a good month for Garden Chairs. I have made a good paying thing letting Chairs out on hire for garden parties, &c. I may here remark that letting goods on hire (Knives and Forks, &c.) pays well if you go well into it. Of course in different localities, watering or seaside places, an ironmonger could dress his window much differently to an inland place. I can-

Keep your counter clean and tidy. When you have finished serving do up your parcel. Always notice when you serve any article if you have any more left; if not, put it down in the "goods-wanted book." I have never found any better plan of keeping Brassfoundry than on shelves, in cardboard boxes, nicely faced. I have, however, a nest of drawers made, in which I

parcels to see what size Spring-Hooks or Screw-Pulleys you want. Better do this than order from memory, and then find out you have made a mistake in the size. To ironmongers I say do all the buying you can yourself. Do not leave it to other people. There are many other things—the way to keep Brushes, Bolts and Nuts, Tube Fittings. I may, however, touch on these another time.

#### OBITUARY.

At a meeting of the American Pocket Cutlery Association, held at the Astor House, New York, December 8, 1887, Col. W. B. Rudd announced the death of Ex-Governor Holley, president of the Holly Mfg. Company. A committee was appointed to draft appropriate resolutions, and reported the following, which were unanimously adopted:

*Whereas*, It has pleased Providence to remove our worthy and eminent co-worker Ex-Governor Holley, of Connecticut, it seems fitting that we should give expression to the natural feelings of our hearts on this occasion;

*Resolved*, That in the death of Ex-Governor Alexander Hamilton Holly the Pocket Cutlery Manufacturers lose their eldest associate, as well as one of the founders of the industry in this country. His sterling integrity did much to encourage the use of the best materials, and establish the excellent reputation of American Cutlery.

*Resolved*, That we tender to the family of our departed friend our most heartfelt sympathy, and trust the recollection of his long and blameless life, well-rounded out

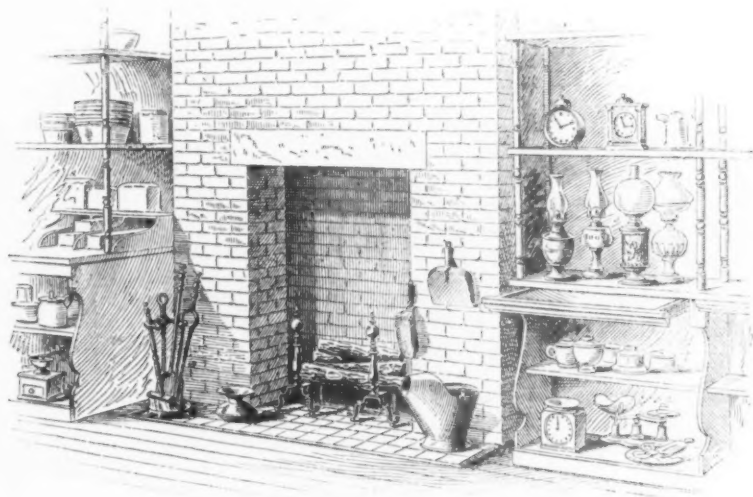


Fig. 169.—Open Fire-Place.

not, however, too strongly impress upon your readers the necessity of keeping a window well dressed and neat. What is worse than to see a window dressed with Lamps with half the chimneys and globes broken off, and the rest all dusty. The Tool trade is one not properly cultivated by many ironmongers. I must confess for years I did not trouble about it. For some years past I have had a good display of Tools, and the result is that I sell £5 worth where I used to take 10/. Always dress a

keep Brass-Head Nails, Drugget Pins, Curtain Hooks, Curtain Rings, Brass Butts, and other small sundries. This saves a lot of trouble. I keep my best Cutlery in drawers. My advice is do not keep buying Ivory Cutlery from a lot of different makers. Choose one good firm, then choose about half-a-dozen good patterns, and stick to them. Always keep your Table and Dessert Knives of the same number tied together. I show my common Black-Faced in the usual way. A good plan, if you wish to keep these nice, is to have some tin cases, open at one end, just large enough to take a dozen Knives and Forks; slip the parcel inside, and have two wire loops in front to take the sample Knife and Fork. I advise any one to see samples of Pocket-Knives, as fresh patterns are always being brought out. I show my Fire-Irons, Trays and Toilet-Ware in glass cases; Fenders I show on racks. I have these racks made so that I can adjust the arms to any distance. I have always found Fenders a difficult article to keep clean. Bedsteads I show, both head and foot. I have some pieces of iron about 4 feet long to take the place of sides. This keeps them up together. In different parts of my shop I display Paint in tins, Knife-Cleaners, Miners, Sauce-Pans—in fact, everything that will take the eye of a customer. Where a good deal of money is lost sometimes is in buying novelties and knick-knacks recklessly. I have made a bad deal or two myself before now, and shall again, I expect. I have never yet found the novelty trade pay; but if you wish to keep your name up you are bound to go into it. I can only say be careful what you buy. It would be a good thing if we could remember that we are now buying some goods much cheaper than formerly, and sell accordingly. I have lately sold Brunswick Black, Knife-Polish and a few other leading articles at a reduced price, and I find people are coming who used to go to the stores. It is useless for us to talk about wholesale houses not supplying the stores. If one house would not do it, another would. The only thing is to see that they supply us as cheaply as they do the stores. We must also remember the stores pay up promptly. Do all ironmongers do so? I am afraid not. Buy your stock properly. Order what you want. Do not be afraid to open a few

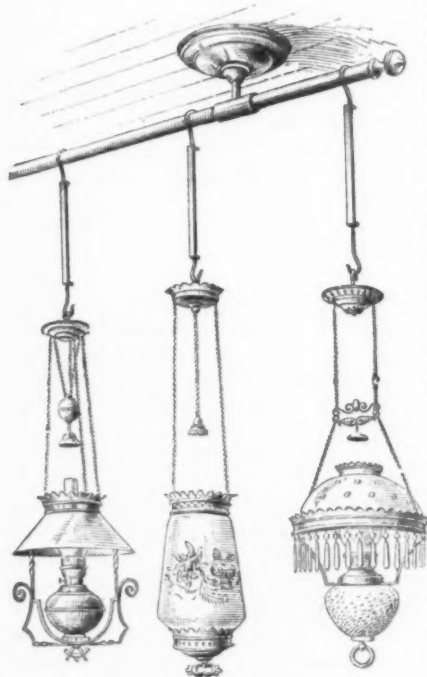


Fig. 170.—Method of Displaying Hanging Lamps.

window so that you can get any article out when wanted. If you put in Bright Steel Goods, Saws, Knives, &c., watch them carefully to see the rust does not lay hold of them. The shape and position of shops vary so that no fixed rule can be given as to the way and position of keeping your stock. I will, however, give a few small hints.

by deeds of usefulness to his family, town and State, may soften their sorrow into gratitude that his life was so long spared for their companionship and enjoyment.

*Resolved*, That these resolutions be published in *The Iron Age*, and a copy be forwarded to the family of our deceased friend.

We are also furnished with the following outline of the career of Governor Holly, with especial reference to his important relation to the establishment in this country of the manufacture of Pocket Cutlery:

Alexander Hamilton Holly, Ex-Governor of the State of Connecticut, was born at Lakeville, Conn., August 12th, 1804. In 1844 he began the manufacture of Pocket Cutlery in his native town. He continued this business with Nathan Merwin as partner until 1854, when a joint stock company was organized under the name of the Holly Mfg. Company. Mr. Holly was elected president of the company, which position he held continuously until his death, which occurred October 2, 1887. As a manufacturer he was eminently successful. He placed only reliable



Fig. 171.—Movable Scales.

goods upon the market. His influence was exerted with all United States makers to have the American reputation for Cutlery made and maintained unrivaled. In 1856 he was elected Lieutenant Governor and in 1857 Governor of the State of Connecticut. He died in his 83d year, worthy of all the respect and honors which had been lavishly bestowed upon him.

#### READING HARDWARE COMPANY,

Reading, Pa., and 81 Reade street, New York, issue, under date January 2, 1888, their No. 9 discount sheet, applying to their catalogue of 1885. Relating, as it does, to the line of goods which they are at present putting on the market, it will be seen that a number of additions have been made since the issue of the catalogue. The prices given below are subject to an additional discount of 10 per cent.:

	Discount per cent.			
Apple Parers, per doz.....	10			
\$9.60 11.15 6.35 5.60 8.00 7.15 6.00				
78 Champion Advance Model 78 Gem 72				
Nut Cracks.....	60			
Coffee Mills.....	30			
Tobacco Cutters, change list.....	45			
Nos.....	8	10	12	
	\$16.00	22.50	28.00	
Kitchen Grindstones, change list.....	37½			
\$30.00 22.00 24.00 27.00 30.00				
Inch.....	8	9	10	12
Scale Weights.....	40			
Scales, Tea and Counter, add No. 166½, \$40.....	40			
Scales, Steel Bearing and Butcher's.....	40			
Brackets, Store Shelf, add per dozen pairs, No. 37, 14 x 18 in., \$15.50; No. 38, 16 x 20 in., \$18.....	50			
Brackets, Store Shelf.....	50			
Brackets, Cottage, Japanned, Nos. 51 to 57.....	60			
Brackets, Cottage, Bronzed, Nos. 913 to 945.....	60&10			
Brackets, Rosette.....	60&10			
Brackets, Crown, Nos. 1048 to 1073 and Nos. 1050 to 1075.....	60&10			
Brackets, Crown, Geneva Bronzed, Nos. 1052 to 1077.....	60			
Brackets, Stair Rail, Lamp and Flower Pot.....	33½			
Butts, Mayer's and Parliament, No. 12.....	66½			
Butts, Fast Joint, No. 14.....	50			
Butts, Fast Joint, No. 16.....	55			
Butts, Loose Joint, Nos. 18, 20, 22 and 23.....	66½			
Butts, Loose Joint, No. 24, new list.....	66½			
2 x 2 2½ x 2 2½ x 2½ 3 x 2½ 3 x 3 3½ x 3				
\$2.80 3.10 3.30 3.60 3.80 4.25				
3½ x 3½ 4 x 3½ 4 x 4 4½ x 4½ 5 x 5				
\$4.50 5.00 5.30 6.30 7.80				
Butts, Loose Pin, Nos. 30, 31, 32 and 33.....	66½			
Butts, Loose Pin, Bronzed, No. 35.....	65			
Butts, Loose Pin, Bronzed, No. 38.....	80&10			
Butts, Loose Joint, No. 25, complete with Screws.....	65			
Butts, Loose Joint, Nos. 44, 46 and 48, change list No. 40.....	75&10			
3 x 3, 3½ x 3½ 4 x 4 4½ x 4½ 5 x 5 5½ x 5½				
\$2.20 2.50 2.75 3.15 3.60 4.30 4.45				
Butts, Loose Joint Nos. 26 and 27.....	80			
Butts, Loose Pin, Nos. 35, 36 and 37.....	75&10			
Butts, Loose Pin, Nos. 41, 339½, 339 and 37.....	75&10			
Butts, Loose Pin, Nos. 351, 353 and 353.....	75&10			
Butts, Loose Pin, Nos. 57 and 58.....	75&10			
Butts, Loose Pin, Nos. 51, 53, 55 and 54.....	75&10			
Butts, Bronze Metal, Nos. 61 and 63.....	66½			
Butts, Bronze Metal, Nos. 66, 68 and 66.....	60&10			
Butts, Bronze Metal, Nos. 73 and 74.....	66½			
Butts, Bronze Metal, Nos. 76 and 78.....	60&10			
Butts, Bronze Metal, Nos. 73 and 75.....	66½			
Butts, Plain Bronze, Nos. 67, 69, 77 and 79.....	60&10			
Butts, Inside Shutter (revised list).....	70&10			
Hinges, Gravity Blind.....	33½			
Hinges, Surface Blind.....	33½			
Hinges, Harbster's Shutter.....	70&10			
Hinges, Lull & Porter's, Extra Heavy.....	35			
Hinges, Blind Door.....	35			
Hinges, Gate, Western, New England and State.....	55			
Gate Latches, Nos. 319 to 322, change list No. 41, \$1.75.....	60			
Gate Latches, Nos. 11 to 23.....	55			
Shutter Catches and Blind Fasteners.....	45			
Turnbuckles.....	45			
Bolts, Tower, Lever and B. K. Barrel.....	60			
Bolts, Wrought Iron Barrel.....	60&10			
Bolts, Wrought Iron Tower and Bronze Barrel.....	60			
Bolts, Barrel, Bronzed and Bronze Metal, Nos. 793 to 819 and 1813 to 1815.....	60			
Bolts, Barrel, Bronze Metal and Brass, Nos. 1803 to 1805 and Nos. 3230 to 3245.....	50			
Bolts, Barrel, Brass.....	60			
Bolts, Flat and Cased Shutter.....	60			
Bolts, Acme and Excelsior Shutter.....	50			
Bolts, Flat Ship, Brass.....	55			
Bolt Staples for Square Bolts.....	60			
Bolts Square Spring and Square Necked, Japanned.....	60			
Bolts Square Spring and Square Necked, Brass, Nos. 3800 to 3835.....	55			
Bolts Square Door, Nos. 777 to 1786.....	65			
Bolts Square Door, Brass.....	55			
Bolts Spring Foot.....	65			
Bolts, Lever Foot.....	60			
Bolts, Chain, Japanned.....	60&10			
Bolts, Chain, Brass.....	55			
Bolts Square, Bottom, Chain and Foot.....	65			
Bolts, Chain and Foot, change list.....	60&10			
Nos.....	771	776	616	621
	\$9.00	10.50	8.00	9.25

Bolts, Mortise Door, add No. 810½, \$4; Geneva, No. 812½, \$1.25; Royal Bronze.....	60			
Bolts, Mortise Door Nos. 3935 to 3965.....	55			
Bolts, Flush, Bronzed and Bronze Metal, new list.....	60&10			
Nos. 861 863 864 866 868 869 871				
\$3.50 3.95 4.35 4.80 5.80 6.75 8.65				
Bolts, Flush, Bronzed.....	65			
Bolts, Flush, Bronze Metal.....	60			
Bolts, Flush, Bronze Metal.....	65			
Bolts, Flush, Brass.....	55			
Chain Door Fasteners, change list, Nos. 341, \$9; 343, \$9.50.....	60			
Chain Door Fasteners, Brass.....	55			
Bolts, Flat Cupboard, add No. 581, \$1.85; German, No. 586, \$3.25, Geneva.....	55			
Bolts, Flat and Straight Cupboard, Brass.....	55			
Door Buttons Nos. 19 to 54 and Nos. 60 to 64.....	60			
Door Buttons, Bronzed and Brass, Nos. 592 to 610.....	55			
French Window Catches, add No. 398, \$22.50; change list, Nos. 411, \$22; 413, \$24, 25.....	55			
Cupboard Catches.....	60			
Cupboard Catches, change list, Nos. 398, \$28.75; 399, \$31.25.....	60			
Cupboard, Elbow, Show Case, and Transom Catches.....	55			
Transom Catches, Bronzed, add No. 399, \$26.25, Geneva.....	60			
Cupboard Turns, change list, No. 431, \$3.00.....	60			
Add Nos. 493 1432 1435				
\$7.50 \$14.00 \$12.50				
Cupboard Latches, add No. 518, \$15, Geneva.....	35			
Cupboard Locas (revised lists).....	60			
Screen Door Catches.....	60&10			
Thumb Latches, Japanned and Bronzed.....	60			
Barn Door Latches and Store Door Handles.....	55			
Store Door Handles (revised list).....	60			
Store Door Handles, change list, Nos. 110, \$7.35; 112, \$12.00; add No. 111, Albion, 12.00.....	55&10			
Store Door Handles, Bronzed and Bronze Metal.....	55			
Store Door Handles, Bronzed.....	60			
Store Door Handles, Bronze Metal, add Nos. 1115, \$5.50; 1115½, \$5.25; Plain Bronze.....	50			
Store Door Handle, Bronzed and Bronze Metal.....	60			
Bank Door Pulls, add No. 1164, \$25.00.....	55			
Push Plates.....	60			
Door Pulls, add No. 157, \$2.75, Geneva.....	55			
Letter Box Plates, change list, No. 334, \$6.50; add Nos. 330, \$4.00; 331, \$4.50; 339, \$8.00.....	60			
Drawer Pulls.....	60½			
Drawer Pulls, change list, No. 244, \$20.00.....	70			
Drawer Pulls, Bronzed Iron, Nos. 183 to 234, change list, No. 214, \$17.00.....	60			
Drawer Pulls, Bronzed Metal and Royal Bronze, Nos. 1183 to 1234.....	65			
Drawer Pulls, Bronzed Iron, Nos. 203 to 210.....	60			
Drawer Pulls, Plain Bronze, Nos. 1208 to 1240.....	65			
Flush Rings.....	55			
Lifting Handles, Japanned.....	60			
Lifting Handles, Brass.....	45			
Chest Handles and Trap Door Rings.....	60&10			
Chest Handles, Surface.....	65			
Hooks, Wardrobe, Japanned and Coppered.....	55			
Hooks, Wardrobe and Hat, Nos. 5785, 5760 and 5770.....	50			
Hooks, Ceiling.....	55			
Hooks, Hat and Coat, change list.....	55			
Nos. 240 242 245 247				
\$2.30 2.30 2.75 2.75				
Hooks, Hat and Coat, add No. A 957, \$18; Albion, No. G 957, \$18; Geneva.....	50			
Hooks, School-House, Baggage Check, Hat Rack and Bars.....	55			
Hooks, Clothes Line.....	60&10			
Hooks, Harness, add No. 153, \$1.50.....	60&10			
Hooks, Chandelier.....	50			
Hooks, Molding.....	50&10			
Hooks, Lamp.....	50			
Hooks, Screw.....	70			
Hooks, Cabin Door.....	60			
Hooks, Bird Cage, add Nos. 978, \$5; 988, \$4.25; Geneva.....	60			
Pulleys, Ride.....	60&10			
Pulleys, Upright.....	70			
Pulleys, Ceiling.....	55			
Pulleys, Brass Screw, Nos. 7000 to 7030.....	60			
Pulleys, Japanned Screw, Incased and Swivel.....	60			
Pulleys, Tackle, Awning and Dumb Waiter.....	61			
Pulleys, Clothes Line.....	55			
Pulleys, Hot House.....	60			
Pulleys, Frame.....	25			
Pulleys, Axle.....	30			
Pulleys, Axle.....	25			
Sliding Shutter Shafts.....	60			
Sliding Door Stops and Rail.....	55			
Sliding Door Shafts.....	60			
Sliding Door Shafts, Hatfield.....	70			
Sliding Door Hangers.....	31			
Wrought Iron Rail.....	25			
Organ Rollers and Sash Rollers.....	60&10			
Sash Cord Irons.....	50			
Window Spring Bolts.....	60&10			
Window Springs.....	65			
Sash Locks and Props.....	70			
Window Springs, Window Bolts and Bolt Sockets.....	60&10			
Shutter Lifts and Screws.....	55			
Stubs and Plates and Sash Centers, add No. 8, \$2.5.....	35			
Knobs, Shutter and Picture, No. 15 and 30.....	60&10			
Knobs, Shutter No. 2.....	60&10			
Knobs, Drawer, No. 40.....	55			
Shutter or Sash Knobs (revised list).....	55			
Sash Lifts, Bronzed and Bronze Metal (revised list).....	60			
Sash Lifts, Flush (revised list).....	55			
Window or Sash Lifts, add No. 1305, \$7.50; Plain Bronze.....	55			
Sash Pull Plates, add No. 910, \$1.25, Geneva (revised list).....	55			
Sash Pull Hooks, add No. 315, \$3.00, Geneva (revised list).....	60			
Shutter Bars, Bronzed, Bronze Metal and Brass (revised list).....	60			
Sash Fasteners (revised list).....	60			

Sash Fasteners (revised list).....	60&10
Jail Padlocks, add No. 170, \$3.90.....	33½
Barn Door Hangers, Nos. 3 to 8 and 15 to 32.....	30
Barn Door Hangers.....	31
Barn Door Stays.....	25
Barn Door Rollers.....	31
Barn Door Pulls.....	60&10
Barn Door Rail and Hay-Fork Hooks.....	40
Hay-Fork Pulleys.....	39½
Ox Balls.....	50
Grindstone Fixtures.....	30
Shingling Hatchets.....	50
Bench Screws and Handles.....	60&10
Melting Ladles.....	35
Saw Clamps.....	40
Screw Braces and Plumb Bobs, change list, No. 25, \$5.50.....	40
Braces, Hazeltine Plain, Nos. 68 to 72.....	40
Braces, Hazeltine Plated, Nos. 88 to 92.....	45
Braces, Chantrell Plain, Nos. 106 to 113.....	37½
Braces, Chantrell Ratchet, Nos. 124 to 131.....	33½
Tool Sets, Chantrell.....	41
Line Cleats.....	55
Malleable Iron Wrenches.....	33½
Wagon and Cart Boxes.....	31
Foot Scrapers, add No. 18, \$4.75.....	50
Porch Irons.....	33½
Well Wheels and Hoisting Pulleys.....	33½
Table Leaf Supports, Cutting Nippers and Pliers.....	35
Quilts and Dumb Bells.....	35
Red Fasten.....	40
Store Truck Castors.....	50
Castors, Plate, Nos. 101 to 127.....	50
Castors, Plate, Nos. 131 to 137.....	45
Castors, Piano Forte.....	50
Castors, French, Nos. 201 to 225.....	Rev. list price \$50
Castors, French, Nos. 231 to 235.....	45
Castors, French, Nos. 241 to 267.....	45
Castors, Bed and Bracket Bed.....	50
Door Bell Levers.....	60
Bells, Lever Door.....	60
Bells, Gong Door.....	40
Bells, Alarm Door.....	35
Bells, House, Bell Metal.....	30
House Bells on Carriages.....	40
Slide Bell Pulls.....	50
Bell Cranks Nos. 10, 20, 15 and 25.....	50
Bell Cranks, Mortise, change list, No. 30, \$8.60.....	50
Bell Cranks, Pulley, Nos. 7, 17, 27 and 37.....	55
Check Springs, change list, No. 1, \$6.00, No. 2, \$7.25.....	60&10
Bell Spikes.....	45
Shade Brackets and Roller Ends.....	25
Window Shade Tracks and Seasonal Sash Weights.....	80
Stove Shovels.....	35
Waffle Irons.....	31
Stove Cover Lifters.....	33½
Spring Coal Tongs.....	25
Ice Picks and Egg Beaters.....	30
Lemon Squeezers, add No. 48½, \$4.25.....	30
Potato Mashers.....	15
Rubber Mops.....	30
Foot Rests and Boot Jacks.....	45
Tack Hammers.....	50
Carpet Stretchers.....	60
Quilting Frame Clamps.....	50 & 5
Quilting Frame Clamps, add No. 16, 3¼ inches, \$1.35; No. 22, 3¼ inches, \$1.65—Swivel Head.....	50
Soap Dishes.....	45
Sad Iron Stands.....	50
Coffee Pot Stands.....	40 & 5
Sad Irons.....	25
Polishing Irons.....	30
Toy Sad Irons and Stands.....	35
Floral Sets.....	30
Savings Banks.....	25
Match Safes.....	40
Twine Boxes.....	40
Paper File Hooks and Paper Clips.....	50
Paper Files, Check Cancelers, Pen Racks and Paper Weights.....	25
Inkstands.....	33½

#### FREIGHTS.

The special Iron tariff which was given in our last issue is worthy the careful attention of manufacturers, affecting as it does the rates of transportation on the different articles and machines enumerated. This special tariff was made on December 29 on the articles named on the basis of 25 cents per 100 pounds in carloads, and 30 cents per 100 pounds in less than carloads, between Chicago and New York, and applies to both eastbound and westbound, going into effect January 9, 1888. It will be observed that this special tariff applies among other goods to the following, which are of special interest in the Hardware trade: Anvils, Axles, Bolts, Iron, in boxes or kegs; Castings, Chain, Cotton Ties, Iron, Cotton Tie Buckles, Crow Bars, Fence Posts, Harrow Teeth, Iron Hollow-ware, Nails or Spikes, Nails, Horseshoe or finishing, in boxes; Nuts, iron, in boxes or kegs; Nut Locks, Picks, Pipe, Rivets, Iron in boxes or kegs; Sash Weights, Screws, Iron, in boxes or kegs; Springs, Carriage, Seat or Wagon; Staples, Iron, in boxes or kegs; Toe Calks, Washers, Iron, in boxes or kegs; Wedges, Wire.









World's Best. \* gross, No. 1, \$12.00; No. 2, \$14.00.  
No. 3, \$30.00.....dis 50&10 %  
Universal.....dis 35.00, dis 35&5 %  
Domestic.....dis 22.50, dis 45 %  
Champion.....dis 22.00, dis 50 %

**Cards.**  
Horse and Curry.....dis 10 @ 10&10 %  
Cotton.....New list Aug., 1883, dis 10 %  
Wool.....dis 10 %

**Carpet Stretchers.**  
Cast Steel, Polished.....dis 28.25  
Cast Iron, Steel Points.....dis 8.04  
Socket.....dis 17.75  
Bullard's.....dis 25 @ 25&10 %

**Carpet Sweepers.**  
Blissell No. 5.....dis 17.00  
Blissell No. 7 New Drop Pan.....dis 19.00  
Blissell No. 12 Hall Sweeper.....dis 36.00  
Grand Rapids.....dis 27.00  
Crown Jewel.....No. 1, \$18; No. 2, \$19; No. 3, \$20  
Magic.....dis 15.00  
Jewel.....dis 17.00  
Mystic.....dis 16.00  
Cottage.....dis 15.00  
Garland.....dis 18.00  
Parlor Queen.....dis 24.00  
Housewife's Delight.....dis 18.00  
Queen.....dis 18.00  
Queen, with band.....dis 18.00  
King.....dis 30.00  
Weed Improved.....dis 18.00  
Hub.....dis 16.00  
Cog Wheel.....dis 16.00  
Chubb.....each \$3.00

**Cartridges.**—See Ammunition.

**Casters.**  
Bed.....New list  
Plate.....dis 55 %  
Shallow Socket.....dis 60 %  
Deep Socket.....dis 40&10 %  
Yale Casters, list May, 1888.....dis 30&10&40 %  
Yale, Gem.....dis 60&10&5 %  
Martin's Patent (Phoenix).....dis 45&10 @ 50 %  
Payson's Anti-friction.....dis 60 %  
"Giant" Truck Casters.....dis 10 @ 10&5 %  
Stationary Truck Casters.....dis 45&10 %

**Cattle Loaders.**  
Humason, Beckley & Co.'s.....dis 75 @ 75&10 %  
Sargent's.....dis 60&10 %  
Hotchkiss.....dis 30 %  
Peck Stow & W. Co.....dis 50&10 %

**Chain.**  
Trace, 6-10-2, exact sizes, pair, \$1.03.....dis 50&10&5 %  
Trace, 6-10-3, exact sizes, pair, .92 @ 50&10&7 1/2 %  
Trace, 7-10-2, exact sizes, pair, 1.11  
NOTE.—Traces, "Regular" sizes 3¢ net pair less than exact.

Log, Fifth, Stretcher, and other fancy Chains, list Nov. 1, 1884.....dis 50&10 @ 50&10&5 %  
American Coll 3-16 1/4 5-16 3/4 7-16 1/2 9-16 3/4  
In case lots, 9 6-40 5-35 4-60 4-40 4-20 3-95 3-75  
Less than case lots, add 1/4 @ 1/4¢  
German Coll, list of June 20, 1887.....dis 60 @ 60&5 %  
Ger. Halter Chain, list of June 20, 1887.....dis 60 @ 60&5 %  
Covert Halter, Hitching and Breast.....dis 35 @ 35&2 %  
Covert Traces.....dis 45 %  
Onida Halter Chain Cold list.....dis 45 %  
Galvanized Pump Chain.....dis 6¢ @ 6¢  
Jack Chain, Iron.....dis 75&10 @ 75&10&5 %  
Jack Chain, Brass.....dis 70&10 @ 75 %

**Chalk.**  
White.....dis 55¢  
Red.....dis 75¢  
Blue.....dis 90¢  
White Crayons.....dis 12¢ @ 12¢

**Chalk Lines.**—See Lines.

**Chisels.**  
Socket Framing and Firmer—  
Witherby and Douglas.....dis 75&10 @ 75, 10&5 %  
P. S. & W.....dis 90 %  
Buck Bros.....dis 90 %  
Merrill.....dis 60&10 @ 60&10&5 %  
L. & I. J. White.....dis 30 @ 30&5 %  
Tanged Firmer.....dis 40&10 @ 50 %  
Tanged Firmer, Butcher's.....dis 45 @ 50 %  
Tanged Firmer, Spear & Jackson's.....dis 50 @ 50 %  
Tanged Firmer, Buck Bros.....dis 30 %  
Cold Chisels.....dis 16¢ @ 16¢

**Chucks.**  
Beach Patent.....each \$8.00, dis 20 %  
Morse's Adjustable.....each \$7.00, dis 20 @ 20&5 %  
Danbury.....dis 60.00, dis 30 @ 30&5 %  
Syracuse, Balz Pat.....dis 25 %

**Clamps.**  
Providence Tool Co.'s Wrought Iron.....dis 25 %  
Adjustable, Gray's.....dis 20 %  
Adjustable, Lambert's.....dis 40&10 %  
Adjustable, Snow's.....dis 40&10 %  
Adjustable, Hammer's.....dis 15 %  
Adjustable, Stearns'.....dis 20&10 %  
Stearns' Adjustable Cabinet and Corner.....dis 20&10 %  
Cabinet, Sargent's.....dis 60&10 %  
Carriage Makers', Sargent's.....dis 60&10 %  
Bernard Mfg. Co.....dis 40&10 @ 40&10 %  
Warner's.....dis 40&10 @ 40&10&5 %  
Saw Clamps.....dis 50 %

**Clips.**  
Norway, Axle, 1/4 & 5-16.....dis 55&10&5 %  
Second grade Norway Axle, 1/4 & 5-16.....dis 65&10&5 %  
Superior Axle Clips.....dis 60&10 @ 60&10&5 %  
Norway Spring Bar Clips, 5-16.....dis 60&10&5 %  
Wrought-Iron Felloe Clips.....dis 54¢  
Steel Felloe Clips.....dis 50 %

**Cockroaches.**.....dis 50 %

**Cocks, Brass.**  
Hardware list.....dis 55&2 %

**Coffee Mills.**  
Box.....dis 50&10&2 %  
Side.....dis 45&10&2 %  
Selsor's Patent.....dis 50.00, \$10.00, dis 25 %  
American, Enterprise Mfg. Co.....dis 20&10 @ 30 %  
The "Swift," Lane Bros.....dis 20&10 %  
Webb's Patent.....dis 45 %

**Compasses, Dividers, &c.**  
Compasses, Callipers, Dividers.....dis 70 @ 70&10 %  
Bemis & Call Co.'s Dividers.....dis 60&5 %  
Bemis & Call Co.'s Compasses & Callipers.....dis 50&5 %  
Bemis & Call Co.'s Wing & Inside or Outside.....dis 50&5 %  
Bemis & Call Co.'s Double.....dis 60 %  
Bemis & Call Co.'s (Call's Patent Inside).....dis 30 %  
Excelsior.....dis 50 %  
J. Stevens & Co.'s Callipers and Dividers.....dis 25&10 %

**Coopers' Tools.**  
Bradley's.....dis 20 %  
Barton's.....dis 20 @ 20&5 %  
L. & I. J. White.....dis 20&5 %  
Albertson Mfg. Co.....dis 25 %  
Beatty's.....dis 40 @ 40&5 %  
Sandusky Tool Co.....dis 30 @ 30&5 %

**Corkarrows.**  
Humason & Beckley Mfg. Co.....dis 40 @ 40&10 %  
Clough's Patent.....dis 33 1/2 @ 33 1/2 %  
Howe Bros. & Hulbert.....dis 35 %

**Corn Reavers and Cutters.**

Bradley's.....dis 10 %  
Wadsworth's.....dis 25 %

**Cradles.**—Grain.....dis 50&10 @ 60 %

**Crow Bars.**

Cast Steel.....dis 4¢  
Iron, Steel Points.....dis 3 1/2¢

**Curry Combs.**

Fitch's.....dis 50&10 @ 50&10&10 %  
Rubber.....dis 10.00, dis 20 %  
Perfect.....dis 50 %

**Curtain Pins.**

Silvered Glass.....net  
White Enamel.....net

**Cutlery.**

Beaver Falls and Hoot's.....dis 33 1/2¢  
Wostenholme.....\$7.75 to 2

**Dampers, &c.**

Dampers and Clips, Buffalo.....dis 40 %  
Crown Fanter.....dis 40 %  
Excelsior.....dis 40&10 %

**Dividers.**—See Compasses

**Dog Collars.**

Embossed Gilt, Pope & Stevens' list.....dis 30&10 %  
Leather, Pope & Stevens' list.....dis 40 %  
Brass, Pope & Stevens' list.....dis 40 %

**Door Springs.**

Torrey's Rod, regular size.....dis 1.30  
Gray's.....dis 20.00, dis 20 %  
Bee Rod.....dis 20.00, dis 20 %  
Warner's No. 1, \$2.50; No. 2, \$3.30, dis 40&10&30 %  
Gem (Coll), list April 19, 1888.....dis 10 %  
Star (Coll), list April 19, 1888.....dis 20 %  
Victor (Coll).....dis 60 @ 60&10 %  
Champion (Coll).....dis 60&10 @ 60&10&10 %  
Philadelphia.....dis 40 %  
Cowell's.....No. 1, \$18.00; No. 2, \$15.00, dis 50 %  
Rubber, complete.....dis 4.50, dis 55&10 %  
Hercules.....dis 50 %  
Shaw Door Check and Spring.....dis 25 @ 30 @ 35 %  
Elliott's Door Check and Spring.....dis 25 %

**Draining Pipes.**

Witherby and Douglas.....dis 75&10 @ 75, 10&5 %  
P. S. & W.....dis 75, 10&5 %  
New Haven and Middlesex.....dis 60&10&10 %  
Merrill.....dis 15&10 @ 25 %  
Watrous.....dis 20&5 %  
Bradley's.....dis 30&5 %  
Adjustable Handle.....dis 35 %  
Wilkinson's Folding.....dis 25 @ 25&5 %

**Drills and Drill Stocks.**

Blacksmiths'.....each \$1.00 @ \$1.05  
Blacksmiths' Self-Feeding.....each \$7.50, dis 20 %  
Breast, P. S. & W.....dis 40&10 %  
Breast, Wilson's.....dis 30&5 %  
Breast, Millers Falls.....each \$2.50, dis 25&10 @ 40 %  
Breast, Bartholomew's.....each \$2.50, dis 25&10 @ 40 %  
Ratchet, Merrill's.....dis 20 @ 20 & 5 %  
Ratchet, Ingersoll's.....dis 25 %  
Ratchet, Parker's.....dis 20 @ 20&5 %  
Ratchet, Whitney's.....dis 20&10 %  
Ratchet, Weston's.....dis 20&10 %  
Ratchet, Moore's Triple Action.....dis 25 @ 30 %  
Whitney's Hand Drill, Plain, \$1.00, Adjustable, \$1.20.....dis 20&10 %  
Wilson's Drill Stocks.....dis 1' %  
Automatic Boring Tools.....each \$1.75 @ \$1.00

**Drill Bits.**—See Bits.

**Drill Chucks.**—See Chucks.

**Dripping Pans.**

Small sizes.....dis 7¢  
Large sizes.....dis 9¢

**Egg Beaters.**

National.....dis 2.00  
Family T. & S. Mfg. Co.....dis 1.70 @ \$1.00  
Standard (Standard Co.).....dis 2.00  
Kingston (Standard Co.).....dis 1.70  
Acme (Standard Co.).....dis 1.70  
Duplex (Standard Co.).....dis 1.70  
Triumph T. & S. Mfg. Co.....dis 1.70 @ \$1.50  
Advance No. 1.....dis 1.00  
Bryant's.....dis 1.50  
Ayres' Spiral.....dis 1.50  
Paine, Diehl & Co.'s.....dis 1.50  
Electric Steel Sets, Wollensak's.....dis 1.50  
Bigelow & Dowse.....dis 1.50

**Emery.**

No. 4 to No. 54 Flour C.F.  
40 gr. 150 gr. F.F.F.  
Kegs, 1/2 lb.....dis 2 1/2¢  
1/4 kegs, 1/2 lb.....dis 2 1/2¢  
1/4 kegs, 1/2 lb.....dis 2 1/2¢  
10 lb cans, 10 in case.....dis 5¢  
10 lb cans, less than 10 lb.....dis 10¢  
7 1/2¢

**Enameled and Tinned Ware.**—See Hollow Ware.

**Escutcheon Pins.**

Iron, list Nov. 11, 1885.....dis 50&10 @ 50&10&5 %  
Brass.....dis 65 @ 65&5 %

**Escutcheons.**

Door Lock.....Same discounts as Door Locks  
Brass Thread.....dis 60 @ 60&10 %  
Wood.....dis 25 %

**Faucets.**

Bobren's Patent Rubber Ball.....dis 25 %  
Fenn's Cork Stops.....dis 33 1/2¢  
Star.....dis 60 @ 60&5 %  
Fraser's Patent Petroleum.....dis 40&10&2 %  
West's Patent Key.....dis 50&10 %  
Anchor.....dis 45 %  
Metallic Key, Leather Lined.....dis 55&10 @ 60&10 %  
Cork Lined.....dis 70 @ 70&10 %  
Burnside's Red Cedar.....dis 50 %  
Burnside's Red Cedar, bbl. lots.....dis 50&10 %  
J. Sommer's Best Block Tin Key.....dis 40 %  
J. Sommer's Cork Lined, 1st quality.....dis 50 %  
J. Sommer's Diamond Lock.....dis 40 %  
J. Sommer's Perfecting, Flat Red Cedar.....dis 50 %  
J. Sommer's Goodenough Cedar.....dis 60 %  
Self-Measuring, Enterprise.....dis 436.00—dis 20&10 %  
Self-Measuring, Lane's.....dis 436.00—dis 25&10 %  
Self-Measuring, Victor.....dis 436.00—dis 25&10 %

**Felloe Plates.**.....dis 6 @ 6¢

**Fifth Wheels.**—Derby and Cincinnati.....dis 45&5 %

**Files.**

Best brands.....dis 60&10 @ 60&10&5 %  
Good brands.....dis 60&10&5 @ 60&10&10 %  
Fair brands.....dis 70 @ 70&10 %  
Heller's Horse Rasps.....dis 60&7 1/2 @ 50&10 %

**Imported.**

J. & Riley Carr.....List, April 1, 1883, dis 15 %  
J. & Riley Carr Horse Rasps.....dis 15 %  
Moss & Gamble.....List April 1, 1883, dis 15 %  
Butcher.....dis 20 %  
Stubs.....dis 25 @ 30 %  
Turton's.....dis 20 @ 25 %  
Greaves' Horse Rasps.....American list, dis. 60 %

**Fluting Machines.**

Knox, 1/4-inch Rolls.....\$3.25 each (dis 35 %  
Knox, 1/2-inch Rolls.....\$3.50 each (dis 35 %  
Fagle, 3/4-inch Roll.....\$2.15, dis 35 %  
Fagle, 5/4-inch Roll.....2.85, dis 35 %  
Crown, 1/4 in., \$3.50; 6 in., \$4.00; 8 in., \$4.50 each, dis 35 %  
Crown Jewel.....dis 15.50 each, dis 35 %  
American, 5-1/2 in., \$3; 6 in., \$3.40; 7 in., \$4.50 each, dis 35 %  
Geneva Hand Fluter, White Metal.....\$1.50 each, net  
Domestic Fluter.....dis 12, dis 25 %  
Crown Hand Fluter, Nos. 1, \$15; 2, \$12.50; 3, \$10, dis 30 %  
Shepard Hand Fluter, No. 85.....dis 15.30, dis 40 %  
Shepard Hand Fluter, No. 110.....dis 11.30, dis 40 %  
Shepard Hand Fluter, No. 95.....dis 8, dis 40 %  
Clark's Hand Fluter.....dis 15.00, dis 35 %  
Combined Fluter and Sad Iron.....dis 10.00, dis 30 %  
Buffalo.....dis 10.00, dis 10 %

**Fluting Scissors.**.....dis 45 %

**Forks.**—Hay, Manure, &c. Asso. list.....dis 65&5 %  
Hay, Manure, &c. Phila. list.....dis 60 @ 60&5 %  
Plated, see Spoons.

**Fruit and Jelly Presses.**

Enterprise Mfg. Co.....dis 20&10 @ 30 %  
Henis.....dis 40 %

**Fry Pans.**

Association List.....dis 75 @ 75&10 %  
No. 1, \$3.75; 4 1/2, \$4.30; 6 1/2, \$5.55; 7 1/2, \$7.10; 11, \$12.25

**Fuse.**.....\$1000 fr.

Common Hemp Fuse, for dry ground.....\$2.70  
Common Cotton Fuse, for dry ground.....4.75  
Single Taped Fuse, for wet ground.....4.75  
Double Taped Fuse, for very wet ground.....7.25  
Triple Taped Fuse, for very wet ground.....7.50  
Small Gun, Percha Fuse, for wat. r.....12.00  
Large Gun, Percha Fuse, for wat. r.....12.00

**Gauges.**

Marking Mortise, &c.....dis 60&10 %  
Wire, low list.....dis 10&10 %  
Wire, Wheeler, Madden & Co.....dis 10 %  
Wire, Morse's.....dis 50 @ 50&5 %  
Wire, Brown & Sharpe's.....dis 10 @ 20 %

**Gimlets.**—Nail and Spike.....dis 50&10&5 %  
"Eureka" Gimlets.....dis 40&10 %  
"Diamond" Gimlets.....dis 50 @ 50&5 %  
Double Cut, Shepardson's.....dis 45 @ 45&5 %  
Double Cut, Ives.....dis 60 @ 60&5 %  
Double Cut, Douglass'.....dis 40&10 %  
"Bee".....dis 12, dis 25 @ 25&5 %

**Glue Pots.**

Tinned and Enameled.....dis 40&5 @ 40&10&5 %  
Family, Howe's "Eureka".....dis 40 %  
Family, L. F. & C.'s "Handy".....dis 50 %

**Grindstone Fixtures.**

Sargent's Patent.....dis 70&10 %  
Reading Hardware Co.....dis 30&10 %

**Hack Saws.**—See Saws.

**Halters.**—Covert's Pat. 1/4 Jute.....dis 50&5 %  
Covert's Hemp Horse and Cattle Tie.....dis 50&5 %  
Covert's Jute Horse and Cattle Tie.....dis 60&10&5 %

**Hammers.**

Handled Hammers.....List Dec. 1, 1885, dis 25 @ 25&10 %  
Mardole's.....dis 25 @ 25&10 %  
Buffalo Hammer Co.....dis 15, 15 '87  
C. Hammond & Son.....dis 50 @ 50&5 %  
Humason & Beckley.....dis 10 %  
Atkins Tool Co.....dis 15 %  
verree.....dis 5 %  
Magnetic Tack, Nos. 1, 2, 3, 1.25, 1.50 & 1.75, dis 30&10 %  
Nelson Tool Works.....dis 40&10 %  
Warner & Nobles.....dis 20 @ 25 %  
Peck, Stow & Wilcox.....dis 40 %  
Sargent's.....dis 33 1/2 @ 10 %

**Heavy Hammers and Sledges.**

3 lb and under.....dis 40¢  
3 to 5 lb.....dis 70 @ 70 %  
Over 5 lb.....dis 85 %  
Wilkinson's Smiths'.....dis 10¢ @ 11¢

**Hand Cuffs and Leg Irons.**

Providence Tool Co., Hand Cuffs, \$15.00, dis 10¢  
Providence Tool Co., Leg Irons, \$25.00, dis 10¢  
Tower's.....dis 25 %  
Daley's Improved Hand Cuffs: 2 Hands, Polished, \$5; 3 Hands, Polished, \$7; 2 Hands, Nickel, \$8; 3 Hands, Nickel, \$10, dis 20 %

**Handles.**

Iron, Wrought or Cast—  
Door or Thumb.....dis 40&10 @ 40&10&5 %  
Nos. 0 1 2 3 4  
Per doz. \$0.90 1.00 1.18 1.35 1.50.....dis 60&10&10 %  
Rogin's Latches.....dis 30¢ @ 35¢  
Bronze Drop Latches.....dis 70¢ net  
Jard Store Door Handles—Nuts, \$1.65; Plate, \$1.10;  
no Plate, \$0.88.....dis 10¢ net  
Barn Door.....dis 1.40, dis 10&10 %  
Chest and Lifting.....dis 70 %

**Handles, Wood.**

Saw and Plane.....dis 40&10 @ 40&10&5 %  
Hammer, Hatchet, Axe, Sledge, &c.....dis 35 %  
Brass, &c.....dis 35 %  
Hickory Firmer Chisel, assorted.....dis 2.00  
Hickory Firmer Chisel, large.....dis 5.00  
Apple Firmer Chisel, assorted.....dis 3.00  
Apple Firmer Chisel, large.....dis 6.00  
Socket Firmer Chisel, assorted.....dis 3.00  
Socket Framing Chisel, assorted.....dis 5.00  
J. B. Smith Co.'s Pat. File.....dis 2.75  
Auger, assorted.....dis 5.00  
Auger, large.....dis 7.00  
Patent Auger, Ives'.....dis 30&10 %  
Patent Auger, Douglass'.....dis 1.25 net  
Patent Auger, Swan's.....dis 1.00 net  
Hoe, Rake, Shovel, &c.....dis 50&10 %

**Cross Cut Saw Handles.**

Atkins' No. 1 Loop, 30¢ No. 3, 22¢; No. 2, & No. 4 Reversible, 22¢  
Boynton's Loop Saw Handles.....50¢, dis 60 %  
Champion.....dis 15¢

**Hangers.**

Barn Door, old patterns.....dis 60&10&10 @ 70 %  
Barn Door, New England.....dis 60&10&10 @ 70 %  
Samson Steel Anti-Friction.....dis 55 %  
Orleans Steel.....dis 55 %  
Hamilton Wrought Wood Track.....dis 55 %  
U. S. Wood Track.....dis 65 %  
Champion.....dis 60 %  
Rider and Wooster, Medina Mfg. Co.'s list.....dis 70 %  
Climax Anti-Friction.....dis 55 %  
Climax Steel Anti-Friction.....dis 55 %  
Zenith for Wood Track.....dis 55 %  
Reed's Steel Arm.....dis 40 %  
Challenge, Barn Door.....dis 50 %  
Sterling Improved (Anti-Friction).....dis 50 %  
Victor, No. 1, \$15; No. 2, \$16.50; No. 3, \$18, dis 50&10 %  
Charlton.....dis 50&10 %  
Kidder's.....dis 60&10 @ 60 %  
The "Boss".....dis 60 %  
Best Anti-Friction.....dis 60 %  
Duplex (Wood Track).....dis 60 %

Terry's Patent.....\$ doz. pr. 3 1/2 in. \$10; 5 in. \$12.  
 Cronk's Patent.....No. 4, \$12; No. 5, \$14.40; No. 6, \$18.  
 Wood Track, Iron Clad.....ft. 10, \$10; 50 ft. \$50.  
 Architect.....\$ set \$5.00, dis 20.  
 Peliss.....\$ set \$4.50, dis 20.  
 Richards.....dis 30 @ 50¢.  
 Lane's Steel Anti-Friction.....dis 40 @ 10¢.  
 The Ball Bearing Door Hanger.....dis 20 @ 10¢.  
 Warner's Patent.....dis 20 @ 10¢.  
 Stearns' Anti-Friction.....dis 20 @ 10¢.  
 Stearns' Challenge.....dis 25 @ 10¢.  
 Faultless.....dis 40 @ 10¢.  
 American.....dis 40 @ 10¢.  
 Rider & Wooster, No. 1, 6 1/2; No. 2, 7 1/2.....dis 40.  
 Paragon, Nos. 1, 2 and 3.....dis 40 @ 10¢.  
 Paragon, Nos. 4, 5, 6 and 7.....dis 25 @ 10¢.  
 Crescent.....dis 60 @ 10¢.  
 Nickel, Cast Iron.....dis 50.  
 Nickel, Malleable Iron and Steel.....dis 40.

#### Harness Snaps.—See Snaps.

#### Hatchets.—List Jan. 1, 1888.

Isalah Blood.....dis 35 @ 40¢.  
 Hunt's Shingling Lath and Claw.....dis 40.  
 Hunt's Broad.....dis 40.  
 Buffalo Hammer Co.....dis 40 @ 10¢.  
 Burd's.....dis 40 @ 10¢.  
 Yerkes & Plumb.....dis 40 @ 10¢.  
 Wm. Mann, Jr. & Co.....dis 50 @ 50¢.  
 Underhill Edge Tool Co.....dis 40 @ 10¢.  
 Underhill's Haines and Bright goods.....dis 33 1/2.  
 C. Hammond & Son.....dis 40 @ 10¢.  
 Peck's.....dis 40 @ 10¢.  
 Kelly's.....dis 50 @ 50¢.  
 Sargent & Co.....dis 50.  
 Ten Eyck Edge Tool Co.....dis 40 @ 10¢.  
 Collins, following list.....dis 10.  
 Shingling, Nos. 1, 2, 3.....\$ doz \$5.50 \$6.00 \$6.50.  
 Claw, Nos. 1, 2, 3.....\$ doz 6.00 6.50 7.00.  
 Lathing, Nos. 1, 2, 3.....\$ doz 6.50 6.00 6.50.

#### Hay Knives.

Lightning.....Mfrs. price \$ doz \$18 d's 25¢.  
 Electric.....\$ doz \$17 d's 30¢.  
 Gem.....\$ doz \$18 30¢.  
 Wadsworth's.....dis 40 @ 7 1/2¢.  
 Carter's Needle.....dis 11 @ 12¢.  
 Heath's.....\$ doz \$12.50 @ \$14.00.

#### Hinges.

##### Wrought Iron Hinges—

Strap and T.....dis 70 @ 5 1/2¢.  
 Screw Hook and 1/8, 10, 12 in.....\$ doz \$7.50 \$8.00 \$8.50.  
 Strap.....dis 14 to 36 in.....\$ doz \$7.50 \$8.00 \$8.50.  
 Heavy Welded Hook.....dis 8 to 12 in.....\$ doz \$7.50 \$8.00 \$8.50.  
 14 in. & up.....\$ doz \$7.50 \$8.00 \$8.50.  
 Screw Hook and Eye.....dis 1/4 in.....\$ doz \$1.50 \$1.75 \$2.00.  
 1/2 in.....\$ doz \$2.45 \$2.75 \$3.00.  
 Rolled Blind Hinges, Nos. 32 and 34.....dis 50 @ 10¢.  
 Rolled Blind Hinges, Nos. 232 and 234.....dis 50 @ 10¢.  
 Rolled Plate.....dis 70 @ 10¢.  
 Plate Hinges 1/8, 10 & 12 in.....dis 40 @ 10¢.  
 "Providence" over 12 in.....dis 34.

##### Spring Hinges—

Geer's Spring and Blank Butts.....dis 40.  
 Union Spring Hinge Co.'s list, March, 1888.....dis 30.  
 Arme, Crown, Empire and U. S.....dis 30.  
 American, Gem, and Star, Japanned.....dis 30.  
 American, Gem, and Star, Bronzed.....dis 30.  
 Oxford, Bronze and Brass.....dis 30.  
 Barker's Double Acting.....dis 20 @ 10¢.  
 Union Mfg. Co.....dis 25.  
 Bommer's.....dis 30.  
 Buckman's.....dis 15 @ 20¢.  
 Chicago.....dis 30.

##### Gate Hinges—

Western.....\$ doz \$4.40, dis 55.  
 N. E.....\$ doz \$7.00, dis 55.  
 N. E. Reversible.....\$ doz \$5.20, dis 55 @ 10¢.  
 Clark's, Nos. 1, 2, 3.....dis 60 @ 10¢.  
 N. Y. State.....\$ doz \$5.00, dis 55 @ 10¢.  
 Automatic.....\$ doz \$12.50, dis 50.  
 Common Sense.....\$ doz pair \$4.50, dis 50.  
 Seymour's.....dis 45 @ 10¢.  
 Shepard's, Nos. 1, 2, 10 and 30, dis 60 @ 10¢.  
 Shepard's, No. 3.....dis 60 @ 10¢.  
 Reed's Latch and Hinges.....\$ doz sets \$12, dis 50.

##### Blind Hinges—

Parker.....dis 75 @ 2 1/2¢.  
 Palmer.....dis 50 @ 5 @ 10¢.  
 Seymour.....dis 70 @ 2 1/2¢.  
 Nicholson.....dis 45 @ 10¢.  
 Buffer.....dis 50.  
 Clark's, Nos. 1, 3, 5, 40 and 50.....dis 75 @ 10¢.  
 Clark's Mortise Gravity.....dis 50.  
 Sargent's, Nos. 1, 3, 5, 11, 18.....dis 75 @ 10¢.  
 Sargent's, No. 12.....dis 75 @ 10¢.  
 Reading's Gravity.....dis 75 @ 10¢.  
 Shepard's "Noteless," Nos. 50, 60, 65 & 66.....dis 75 @ 10¢.  
 Shepard's Niagara Gravity, Nos. 1, 3 and 5.....dis 80.  
 Shepard's Buffalo Gravity, Nos. 1, 3 and 5.....dis 80 @ 2 1/2¢.  
 Shepard's Champion Gravity, No. 75.....dis 80 @ 10¢.  
 Shepard's Steamboat Gravity, No. 30.....dis 80 @ 10¢.  
 Shepard's Acme Lull & Porter.....dis 75 @ 10¢.  
 Shepard's O. S. Lull & Porter.....dis 75 @ 10¢.  
 Shepard's "Queen City" Reversible.....dis 70 @ 10¢.  
 Clark's Lull & Porter, Nos. 0, 1, 1 1/2, 3, 3 1/2, 5.....dis 75 @ 10¢.  
 North's Automatic Blind Fixtures, No. 2, for Wood, \$10.50; No. 3, for Brick, \$13.50.....dis 25 @ 2 1/2¢.

#### Bars.

##### Handled—

Garden, Mortar, &c.....dis 65 @ 5¢.  
 Planter's, Cotton, &c.....dis 65 @ 5¢.  
 Warren Rod.....dis 60.  
 Maglo.....\$ doz \$4.7.

##### Eye—

D. & H. Scovill.....dis 15.  
 Lane's Crescent Scovill Pattern.....dis 45.  
 Lane's Crescent Planter's Pattern.....dis 45.  
 Lane's Razor Blade, Scovill Pattern.....dis 30.  
 Maynard, S. & O. Pat.....dis 45 @ 5¢.  
 Sandusky Tool Co.....dis 60.  
 Hubbard & Co.....dis 60.  
 Bare.....dis 60.  
 Grub.....dis 60 @ 60 @ 10¢.

#### Hog Rings and Ringers.

Hill's Improved Ringers.....\$ doz \$5.50 @ 5 1/2¢.  
 Hill's Old Style Ringers.....\$ doz \$5.00 @ 5 1/2¢.  
 Hill's Rings.....\$ doz \$5.00 @ 5 1/2¢.  
 Hill's Tongues.....\$ doz boxes \$2.00 @ 2 1/2¢.  
 Perfect Rings.....\$ doz boxes \$1.75 @ 2 1/2¢.  
 Perfect Ringers.....\$ doz \$2.50.  
 Blair's Hog Ringers.....\$ doz \$2.00.  
 Blair's Hog Ringers.....\$ doz \$2.00.

Champion Ringers.....\$ doz \$2.00.  
 Champion Ringers, Double.....\$ doz \$2.25.  
 Brown's Ringers.....\$ doz \$2.00.  
 Brown's Ringers.....\$ doz \$1.25 @ 1.30.

#### Helisting Apparatus.

"Moore's" Hand Holst, with Lock Brake.....dis 15.  
 "Moore's" Differential Pulley Block.....dis 20.

#### Holders, Tool.

Balz Pat.....\$ doz \$4; dis 25.

#### Hollow-Ware.

Iron—  
 Stove Hollow-Ware, Ground.....dis 60 @ 10¢ @ 60 @ 10¢.  
 Stove Hollow-Ware, Unground.....dis 70 @ 10¢ @ 70 @ 10¢.  
 Enamelled and Tinned Hollow-Ware.....dis 70 @ 10¢.

Oral Boilers, Saucepans & Glue Pots.....dis 40 @ 10¢.  
 Gray Enamelled Ware.....dis 10 @ 40 @ 5¢.  
 Agate and Granite Ware.....dis 25.  
 Rustless Hollow-Ware.....dis 50 @ 50 @ 5¢.  
 Galvanized Tea-Kettles—  
 Each.....\$ 55¢ 60¢ 65¢ 75¢.

#### Silver Plated—

Reed & Barton.....dis 40 @ 5¢.  
 Meriden Britannia Co.....dis 40 @ 5¢.  
 Simpson, Hall, Miller & Co.....dis 40 @ 5¢.  
 Rogers & Brother.....dis 40 @ 5¢.  
 Hartford Silver Plate Co.....dis 40 @ 5¢.  
 William Rogers Mfg. Co.....dis 40 @ 5¢.

#### Hooks.

Cost Iron—  
 Bird Case, Sargent's list.....dis 60 @ 10¢.  
 Bird Case, Reading.....dis 60 @ 10¢.  
 Clothes Line, Sargent's list.....dis 60 @ 10¢.  
 Clothes Line, Reading list.....dis 60 @ 10¢.  
 Ceiling, Sargent's list.....dis 55 @ 10¢.  
 Harness, Reading list.....dis 55 @ 10¢.  
 Coat and Hat, Sargent's list.....dis 55 @ 10¢.  
 Coat and Hat, Reading.....dis 50 @ 10¢ @ 50 @ 10¢.

#### Wrought Iron—

Cotton Pat. (N. Y. Mallet & Handle Works).....\$ doz \$1.25.  
 Tassel and Picture (T. & S. Mfg. Co.).....dis 50.  
 Wrought Staples, Hooks, &c.....See Wrought & Wood.  
 Bench Hooks.....See Bench Stop.

#### Wire—

Wire Coat and Hat, Gem, list April, 1888.....dis 45.  
 Wire Coat and Hat, Miles, list April, 1888.....dis 45.  
 Indestructible Coat and Hat.....dis 45.  
 Belt.....dis 75 @ 10¢ @ 80.  
 Grass.....\$ doz \$2.00.  
 Rush.....dis 55 @ 60¢.  
 Whitmore—Patent.....dis 30.  
 Hooks and Eyes—Malleable Iron.....dis 70.  
 Hooks and Eyes—Brass.....dis 60 @ 10¢.  
 Fish Hooks, American.....dis 50.

#### Horse Nails.

Nos. 6 7 8 9 10  
 Ausable.....\$ doz \$2.25 \$2.40 \$2.55 \$2.70 \$2.85.  
 Clinton, Fin. 24 25 26 27 28 29.....dis 40 @ 10¢.  
 Essex.....\$ doz \$2.25 \$2.40 \$2.55 \$2.70 \$2.85.  
 Putnam.....\$ doz \$2.25 \$2.40 \$2.55 \$2.70 \$2.85.  
 Northwest.....\$ doz \$2.25 \$2.40 \$2.55 \$2.70 \$2.85.  
 A. C.....\$ doz \$2.25 \$2.40 \$2.55 \$2.70 \$2.85.  
 C. B. K.....\$ doz \$2.25 \$2.40 \$2.55 \$2.70 \$2.85.  
 Champlain.....\$ doz \$2.25 \$2.40 \$2.55 \$2.70 \$2.85.  
 New Haven.....\$ doz \$2.25 \$2.40 \$2.55 \$2.70 \$2.85.  
 Saranac.....\$ doz \$2.25 \$2.40 \$2.55 \$2.70 \$2.85.  
 Champlain.....\$ doz \$2.25 \$2.40 \$2.55 \$2.70 \$2.85.  
 Capwell.....\$ doz \$2.25 \$2.40 \$2.55 \$2.70 \$2.85.  
 Star.....\$ doz \$2.25 \$2.40 \$2.55 \$2.70 \$2.85.

#### Horse Shoes.—See Shoes, Horse.

Hose, Rubber, competition.....75 @ 10¢ @ 80¢.  
 Standard.....dis 70 @ 10¢.  
 Extra.....dis 60 @ 10¢.  
 N. Y. B. & P. Co., Extra.....dis 30 @ 10¢.  
 N. Y. B. & P. Co., Extra.....dis 30 @ 10¢.  
 N. Y. B. & P. Co., Dundee.....dis 60 @ 10¢.

#### Ice Picks, Chisels, &c.

Am. Ice Chisel Pol'd.....\$ doz \$3.00, dis \$20 @ 5¢.  
 National Ice Chisel.....\$ doz \$3.25, dis 20.  
 Novaya Ice Breakers.....\$ doz \$3.25, dis 20.  
 Dunlap's Ice Picks.....\$ doz \$2.00, dis 15.  
 Wood Head Picks, Sargent's.....\$ doz \$1.50, dis 15.  
 Iron Head Picks, Sargent's.....\$ doz \$1.25, dis 15.  
 Ice Axes, Small Cast or Mail.....\$ doz \$1.25, dis 20 @ 10¢.  
 Combination Ice Tools.....\$ doz \$2.00 net.  
 Acme Ice Pick and Tongs.....\$ gross \$55.00, dis 50 @ 10¢.  
 Roger's Lightning Ice Chisel.....\$ gross \$28.50.

#### Ice Tongs.

Champion, S. S. & Co.....\$ doz \$4.00, dis 25 @ 10¢.  
 Family.....\$ doz \$2.75, dis 20 @ 25¢.

#### Jack Screws.—See Screws.

#### Kettles.

Brass, 7 to 17 in.....Spun, Stamped.  
 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 100  
 Brass larger than 17 inches.....\$ 22¢ 21¢  
 Enamelled and Tea Kettles.....See Hollow-Ware.

#### Keys.

Lock Ass'n list Dec. 30, 1886.....dis 50 @ 10¢ @ 60 @ 5¢.  
 Eagle, Cabinet, Trunk and Padlock.....dis 35 @ 2 1/2¢.  
 Hotchkiss' Brass Blank.....dis 40.  
 Hotchkiss' Copper and Tinned.....dis 40.  
 Hotchkiss' Padlock and Cabinet.....dis 35.  
 Ratchet Bed Keys.....\$ doz \$4.00, dis 15.

#### Knife Sharpeners.

Parkin's Applewood Handles.....\$ doz \$6.00, dis 40.  
 Parkin's Rosewood or Cocobolo.....\$ doz \$9.00, dis 40.

#### Knives.

Wilson's Butcher Knives.....dis 25 @ 30¢.  
 Ames' Butcher Knives.....dis 25.  
 Nichols' Butcher Knives.....dis 40 @ 10¢.  
 Ames' Shoe Knives.....dis 20 @ 25¢.  
 Ames' Bread Knives.....\$ doz \$1.50, dis 15 @ 20¢.  
 Moran's Shoe and Bread Knives.....dis 30.  
 Hay and Straw.....dis 20.  
 Table and Pocket.....See Cutlery.

#### Knobs.

Door Mineral.....dis 65 @ 7 1/2¢.  
 Door Por. Jap'd.....dis 75 @ 80¢.  
 Door Por. Plated Nickel.....\$ doz \$2.00 @ 2.25.  
 Door Por. Plated Nickel.....dis 40.  
 Drawer, Porcelain.....dis 55 @ 10¢ @ 50 @ 10¢.  
 Hemacite Door Knobs, new list.....dis 40 @ 10¢.  
 Yale & Towne Wood Knobs, list Dec., 1885.....dis 40.  
 Furniture Plain.....75¢ gross inch. dis 10.  
 Furniture, Wood Screws.....dis 25 @ 10¢.  
 Base, Rubber Tip.....dis 70 @ 10¢.  
 Picture, Judd's.....dis 60 @ 10¢.  
 Picture, Sargent's.....dis 60 @ 10¢.  
 Picture, Hemacite.....dis 35 @ 5¢.  
 Shutter, Porcelain.....dis 65 @ 10¢.  
 Carriage, Japanned.....\$ gross \$64, dis 60 @ 10¢.

#### Ladies.

Melting, Sargent's.....dis 55 @ 10¢.  
 Melting, Reading.....dis 55 @ 10¢.  
 Melting, Monroe's Patent.....\$ doz \$4.00, dis 40¢.  
 Melting, P. S. & W.....dis 50 @ 10¢ @ 40¢.  
 Melting, Warner's.....dis 80¢.

#### Lanterns.

Tabular, No. 9, without Guards.....\$ doz \$5.75.  
 Tabular, Liftwire, No. 0, without Guards.....\$ doz \$8.50.  
 Tabular, Hinge Tip No. 0, without Guards.....\$ doz \$6.25.  
 Tabular, Bottom Lift, without Guards.....\$ doz \$6.25.  
 Tabular, U. S. Safety Lift Wire, no Guards.....\$ doz \$5.00.  
 Guards for Tabulars, add \$ doz.  
 Police, Small, \$5.00; Med. \$7.25; Large, \$9.75.....dis 20 @ 2 1/2¢.  
 Porter's Tin R.....dis 10 @ 20¢.

#### Lemon Squeezers.

Porcelain Lined, No. 1.....\$ doz \$5.00, dis 25 @ 30¢.  
 Wood, No. 2.....\$ doz \$3.00, dis 35¢.  
 Wood, Common.....\$ doz \$1.70 @ 1.75.  
 Dunsley's Improved.....\$ doz \$1.75, dis 20¢.  
 Sammie.....No. 1, \$5; No. 2, \$9; No. 3, \$15.....dis 25 @ 10¢.  
 Jennings' "Star".....\$ doz \$2.50.  
 The "Boss".....\$ doz \$2.50.  
 Dean's.....Nos. 1, \$ doz \$5.50; 2, \$3.35; 3, \$1.90.  
 Little Giant.....dis 60 @ 50 @ 5¢.  
 King.....dis 40 @ 5¢.

#### Lines.

Cotton and Linen Fish, Draper's.....dis 50.  
 Draper's Chalk.....dis 60.  
 Draper's Mason's Lines, 84 ft., No. 1, \$1.25; No. 2, \$1.75; No. 3, \$2.25; No. 4, \$2.75; No. 5, \$3.25.....dis 25¢.  
 Cotton Chalk.....dis 55.  
 Samson, Cotton, No. 4, \$2; No. 4 1/2, \$2.50.....dis 10¢.  
 Silver Lake, Braided, Nos. 0, \$6.00; No. 1, \$5.50; No. 2, \$5.00; No. 3, \$4.50; No. 4, \$4.00; No. 5, \$3.50; No. 6, \$3.00; No. 7, \$2.50; No. 8, \$2.00; No. 9, \$1.50; No. 10, \$1.00; No. 11, \$0.75; No. 12, \$0.50; No. 13, \$0.25; No. 14, \$0.10; No. 15, \$0.05; No. 16, \$0.02; No. 17, \$0.01; No. 18, \$0.005; No. 19, \$0.002; No. 20, \$0.001; No. 21, \$0.0005; No. 22, \$0.0002; No. 23, \$0.0001; No. 24, \$0.00005; No. 25, \$0.00002; No. 26, \$0.00001; No. 27, \$0.000005; No. 28, \$0.000002; No. 29, \$0.000001; No. 30, \$0.0000005; No. 31, \$0.0000002; No. 32, \$0.0000001; No. 33, \$0.00000005; No. 34, \$0.00000002; No. 35, \$0.00000001; No. 36, \$0.000000005; No. 37, \$0.000000002; No. 38, \$0.000000001; No. 39, \$0.0000000005; No. 40, \$0.0000000002; No. 41, \$0.0000000001; No. 42, \$0.00000000005; No. 43, \$0.00000000002; No. 44, \$0.00000000001; No. 45, \$0.000000000005; No. 46, \$0.000000000002; No. 47, \$0.000000000001; No. 48, \$0.0000000000005; No. 49, \$0.0000000000002; No. 50, \$0.0000000000001; No. 51, \$0.00000000000005; No. 52, \$0.00000000000002; No. 53, \$0.00000000000001; No. 54, \$0.000000000000005; No. 55, \$0.000000000000002; No. 56, \$0.000000000000001; No. 57, \$0.0000000000000005; No. 58, \$0.0000000000000002; No. 59, \$0.0000000000000001; No. 60, \$0.00000000000000005; No. 61, \$0.00000000000000002; No. 62, \$0.00000000000000001; No. 63, \$0.000000000000000005; No. 64, \$0.000000000000000002; No. 65, \$0.000000000000000001; No. 66, \$0.0000000000000000005; No. 67, \$0.0000000000000000002; No. 68, \$0.0000000000000000001; No. 69, \$0.00000000000000000005; No. 70, \$0.00000000000000000002; No. 71, \$0.00000000000000000001; No. 72, \$0.000000000000000000005; No. 73, \$0.000000000000000000002; No. 74, \$0.000000000000000000001; No. 75, \$0.0000000000000000000005; No. 76, \$0.0000000000000000000002; No. 77, \$0.0000000000000000000001; No. 78, \$0.00000000000000000000005; No. 79, \$0.00000000000000000000002; No. 80, \$0.00000000000000000000001; No. 81, \$0.000000000000000000000005; No. 82, \$0.000000000000000000000002; No. 83, \$0.000000000000000000000001; No. 84, \$0.0000000000000000000000005; No. 85, \$0.0000000000000000000000002; No. 86, \$0.0000000000000000000000001; No. 87, \$0.00000000000000000000000005; No. 88, \$0.00000000000000000000000002; No. 89, \$0.00000000000000000000000001; No. 90, \$0.000000000000000000000000005; No. 91, \$0.000000000000000000000000002; No. 92, \$0.000000000000000000000000001; No. 93, \$0.0000000000000000000000000005; No. 94, \$0.0000000000000000000000000002; No. 95, \$0.0000000000000000000000000001; No. 96, \$0.00000000000000000000000000005; No. 97, \$0.00000000000000000000000000002; No. 98, \$0.00000000000000000000000000001; No. 99, \$0.000000000000000000000000000005; No. 100, \$0.000000000000000000000000000002; No. 101, \$0.000000000000000000000000000001; No. 102, \$0.0000000000000000000000000000005; No. 103, \$0.0000000000000000000000000000002; No. 104, \$0.0000000000000000000000000000001; No. 105, \$0.00000000000000000000000000000005; No. 106, \$0.00000000000000000000000000000002; No. 107, \$0.00000000000000000000000000000001; No. 108, \$0.000000000000000000000000000000005; No. 109, \$0.000000000000000000000000000000002; No. 110, \$0.000000000000000000000000000000001; No. 111, \$0.0000000000000000000000000000000005; No. 112, \$0.0000000000000000000000000000000002; No. 113, \$0.0000000000000000000000000000000001; No. 114, \$0.00000000000000000000000000000000005; No. 115, \$0.00000000000000000000000000000000002; No. 116, \$0.00000000000000000000000000000000001; No. 117, \$0.000000000000000000000000000000000005; No. 118, \$0.000000000000000000000000000000000002; No. 119, \$0.000000000000000000000000000000000001; No. 120, \$0.0000000000000000000000000000000000005; No. 121, \$0.0000000000000000000000000000000000002; No. 122, \$0.0000000000000000000000000000000000001; No. 123, \$0.00000000000000000000000000000000000005; No. 124, \$0.00000000000000000000000000000000000002; No. 125, \$0.00000000000000000000000000000000000001; No



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